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COMPUTERWORLD

SPECIAL REPORT: PC SOFTWARE BIG THRILL

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The Series/1 nears the end of the line as an applications processor, with IBM claiming its customers are more interested in using the 11-year-old system in a communications role. Page 59.

IBM to ship OS/2; new era unfolds

BY DOUGLAS BARNEY
and ED SCANNELL
CW STAFF

LAS VEGAS — The starting gun for development of the next generation of software will be fired this week by IBM, which is expected to lay out the delivery schedules for the OS/2 Standard Edition, Extended Edition and Presentation Manager.

With a Comdex/Fall '87 announcement here, IBM will become the first vendor to deliver OS/2. It was unclear at press time exactly when OS/2 will ship.

However, William C. Lowe, president of IBM's Entry Systems Division, recently promised OS/2 availability by the end of this year [CW, Oct. 26].

Jingling the keys

While IBM initially promised to deliver OS/2 early next year, the firm has accelerated its efforts to help boost sales of its Personal System/2 series, which uses the controversial Micro Channel architecture, observers said. Some said OS/2, particularly the Extended Edition, is the key that will unlock the Micro Channel's full potential.

Although many observers and competitors, including compatible maker Compaq Computer Corp., argue that the Micro Channel bus offers no performance advantages when running OS/2, IBM has aimed the new bus squarely at optimizing the performance of a multitasking operating system. Actual user experiences comparing OS/2 performance on the PS/2 and clones, however, may determine the long-term degree of acceptance of the PS/2s.

OS/2 will not be without applications for long, according to software vendors. Many firms,

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DEC readying four-CPU VAX

Running expected VMS revamp, system will nudge 3090 mid-range

BY JAMES CONNOLLY
and STANLEY GIBSON
CW STAFF

MAYNARD, Mass. — Digital Equipment Corp. is planning a drive into the heart of IBM's mainframe line with the development of a four-processor system based on DEC's high-end uniprocessor VAX 8700, according to an internal memo obtained by *Computerworld*.

The system and an expected new release of DEC's VMS [CW, Oct. 12] are said by industry analysts to be designed to extend DEC's performance to almost twice the power of the dual-processor VAX 8800 and to overcome user complaints about performance degradation when CPUs are added to Vaxclusters.

The machine and the release of the VMS operating system, designed to provide symmetrical processing in place of an existing master-slave approach, will be announced in early December, when the Digital Equipment Computer Users Society is set to meet in Anaheim, Calif., or in late January, sources close to DEC said. A DEC spokesman declined to comment.

The new VAX system was reportedly among several unannounced products shown to more than 300 target customers in what one analyst called a "secret room" at the Decworld '87 expo in Boston in September.

Marketing organization efforts now under way are directed at DEC's largest customer accounts, which need higher performance than is offered by the 8800 at a price lower than that of loosely coupled Vaxcluster configurations. The selected customers include some of DEC's traditional users from CPU-intensive scientific and engineering fields and prospects from the

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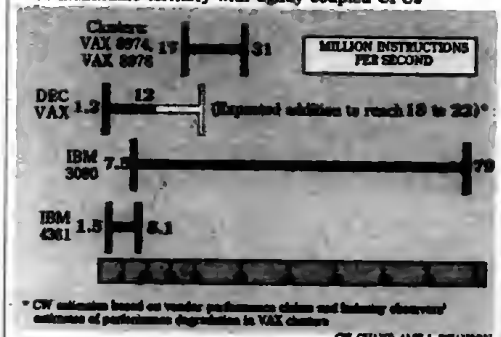
Reaching out

Expected addition to VAX line would move DEC further into IBM mainframe territory with tightly coupled CPUs



CW CHART: AMY J. SWANSON

Heat's on program trades

BY MITCH BETTS
CW STAFF

In the wake of what is being called Black Monday, the Oct. 19 collapse of the stock market, major financial exchanges and government officials are sorting through market data and conflicting arguments to determine whether computer-assisted stock trading made a bad day even worse.

The Chicago Mercantile Exchange last week tried to defend computer-generated program trading from widespread criticism.

"To suggest that stock index futures and options, program trading, portfolio insurance, computers, etc. caused the stock market correction is sheer nonsense," officials at the exchange, known as the Merc, said in a prepared statement.

"Certainly, computers were a factor in last week's market decline, but only in the same sense as telephones, facsimiles, quote machines and other modern-day technological tools," they added.

Meanwhile, the New York Stock Exchange continued to urge brokerage houses to refrain from using the NYSE high-speed order delivery system for program trading until the market gains more stability.

Many Wall Street executives and members of Congress have blamed the fast pace of the crash on program trading [CW, Oct. 26]. Critics said computer-guided trades dumped large amounts of stock after the market's plunge began and provided the momentum for the historic 508-point drop in the Dow Jones industrial average.

The Merc and the rest of the futures industry are defensive about program trading because

Continued on page 6

Amdahl kills Aspen plan, favors Unix

BY KATHY CHIN LEONG
CW STAFF

SUNNYVALE, Calif. — Amdahl Corp. President Joseph Zemke dropped a bombshell during a routine briefing with analysts last week when he announced that Aspen, the company's 7-year-old mainframe operating system development project, will be dismembered.

The disclosure followed the arbitration order handed down six weeks ago providing Fujitsu Ltd. — which owns 46% of Amdahl's stock — unprecedented access to IBM's systems software source code. But Zemke said Fujitsu management had nothing to do with the decision to shelve Aspen and instead focus on its version of Unix.

The Aspen project was the company's attempt to build a proprietary operating system that would take advantage of the IBM 370 architecture. It was intended to be easier to use than MVS and would have been suit-

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NEWSPAPER

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Vegas premieres. Comdex-goers can look forward to a slew of products for the VGA aftermarket, offerings for current and next-generation PCs, local communications enhancements, Microsoft's Pagemaker and a display of Honeywell Bull's DPS 6 Plus 210 and 220 minicomputers. Pages 128, 129.

Bottleneck opener. Unisys revamps its A15 large-scale systems, claims new I/O module boosts performance 20%. Page 8.

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"You bring one [laptop computer] out on a plane, and you make a spectacle of yourself. You look like a real nerd. Then you attract guys who see your PC, and because his kid has a computer, he thinks you're brothers."

JEFF EHRLICH
GENERAL ELECTRIC CO.

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DCA in takeover bid for Ungermann-Bass

BY KATHY CHIN LEONG
CW STAFF

ALPHARETTA, Ga. — Less than a month after its purchase of network vendor Fox Research, Inc., Digital Communications Associates, Inc. (DCA) has launched a takeover attempt on Ungermann-Bass, Inc.

DCA's unsolicited proposal to merge Ungermann-Bass with one of its independent subsidiaries, valued at about $175 million, was made to the Ungermann-Bass board of directors. Although Ungermann-Bass has yet to schedule a meeting to consider the abrupt offer, President and Chief Executive Officer Ralph Ungermann issued a statement indicating that his company is opposed.

"It is obvious that the proposal has been timed to take advantage of the unprecedented decline in the securities markets," Ungermann said.

One-sided benefit

Analysts tracking the firms said the potential merger is a fine fit for DCA but not for Ungermann-Bass. DCA needs a high-end networking vendor to fill out its line of communications products, said Brad Baldwin, an analyst at Dataquest, Inc.

However, Ungermann-Bass, known for developing a wide range of products internally, would gain only manufacturing expertise and wide sales channels from DCA, analysts agreed.

"A hostile takeover attempt in the data communications industry is rare and not wise," Baldwin said. "In this industry, the people assets are the key to the technology. My feeling is that a lot of people would leave, particularly Ralph [Ungermann]."

Glen Pafuni, an analyst at Everstat Fleming, Inc., said the union "makes a great deal of sense. DCA has strong management. Ungermann-Bass has weak management. I don't know how well the two groups would get along, though."

Financial analysts found the match sound but acknowledged that the merger would be difficult. "This would be hard to resist from a stockholder's point of view," said one analyst who requested anonymity. "DCA could pull it off. They tend to grow by acquisition, but with Ungermann-Bass resisting, it would be difficult to integrate the two groups smoothly."

Strong opposition

The DCA proposal, Ungermann said, "clearly is not in the best interests of Ungermann-Bass shareholders and customers." Considering Ungermann-Bass's growth in recent months, coupled with the unstable market, "this is obviously not the time" for an acquisition, he added. The company posted net revenue of $38.2 million for the quarter ending Oct. 3., a 28% gain from the previous year.

DCA officials stressed that the proposal is a "friendly, non-hostile" effort to broaden resources of the two communications companies. DCA sent a letter of proposal to Ungermann-Bass Oct. 22.

DCA's latest moves represent the first time it has tackled such a large firm. In an earlier interview, DCA President Jim Ottinger said, "We make an acquisition when it makes sense to us. We focus on private companies with an established business. We acquire them and let them run it on their own."

Spreading its wings

DCA's 16-month buying binge

May 1986	Forte Communications	Not disclosed	Product line merged with Irma board line; company folded under the DCA Personal Computer Communications Group led by Howard Luffler
September 1986	Cohesive Network	$30M	President leaves, consultant Richard Joyce comes in as general manager; company wrapped under the DCA Network Communications Group headed by John Douglas
October 1986	Microtaf	$15M	Name changed to Crosstalk Communications, separate business unit in Personal Communications Group
September 1987	Fox Research	$16M	Engineering and marketing staff headed up; company name changed to 10-Net, separate business unit in Personal Communications Group

INFORMATION PROVIDED BY DIGITAL COMMUNICATIONS ASSOCIATES, INC.
CW CHART

IBM-Fujitsu's 'coerced license'

BY CLINTON WILDER
CW STAFF

CHESAPEAKE, Va. — Critics of the landmark arbitration ruling requiring IBM to share operating system source code with Fujitsu Ltd. have mischaracterized it as an agreement between the two technology giants, according to one of the arbitrators responsible for the ruling. John L. Jones says there should be no doubt who is calling the shots in the historic dispute — himself and fellow arbitrator Robert Mnookin.

"This was an order, a coerced license, where IBM is going to have to do some things they really don't want to do, and Fujitsu is going to have to do some things they don't really want to do," Jones says. "We keep hearing things like, 'IBM agreed to do this or that.' Well, they sure didn't."

The role of order-giver to IBM and Fujitsu belies Jones' character. There could hardly be a more unlikely site for deciding the future of two global technology giants than Jones' custom-built log-frame house set in the pine woods of southern Virginia. Linked by facsimile machine and telephone to two of the most powerful corporate law firms in the U.S., Jones enjoys a peaceful setting in which to resolve the complex technological and legal dispute entrusted to him and Stanford University law professor Mnookin.

"You had two of the largest companies in the world trying to resolve their differences for five years," Jones notes with irony while driving the flat coastal landscape here in his pickup truck. "They basically decided that they couldn't do it [themselves]."

Jones' and Mnookin's unprecedented and complex resolution will give Fujitsu the right to study IBM's jealously guarded source code — under controlled conditions to be specified by the arbitrators — in return for substantial access fees to IBM.

Door-slamming

Legal experts and some industry executives have praised the arbitrators' decision as a potential model for future technology controversies. But others, notably the software industry trade group ADAPSO, have denounced the decision as giving an unfair edge to a major Japanese competitor as IBM is slamming the door on source code access in the U.S. [CW, Oct. 5].

Jones' path to his current position is as unlikely as his route from an Iowa farm to the executive suite of the U.S.'s 10th largest transportation company.

As executive vice-president of MIS, labor relations and personnel at Norfolk Southern Corp., Jones was one of a handful of large IBM customers picked to testify on behalf of Big Blue in the U.S. government's antitrust suit in the late 1970s.

That experience brought Jones in contact with Thomas D. Barr, then and now a leading IBM attorney and partner in the New York firm of Cravath, Swaine & Moore.

When IBM and Fujitsu decided in 1985 to submit their failed 1983 software licensing agreements to two independent arbitrators, Barr chose Jones, and Fujitsu's U.S. law firm, San Francisco-based Morrison & Foerster, selected Mnookin.

Jones is firm in his belief that arbitration can be an excellent method for resolving computer vendors' legal disputes involving arcane technological issues. IBM and Fujitsu "wouldn't be halfway through discovery now if they had gone to court," he says. "The faster these problems can get resolved, the better off everybody is going to be, including the users. The uncertainty that was involved here was the biggest problem for the user."

Jones: Fujitsu only given a 'reasonable opportunity'

What is your current timetable for establishing Fujitsu's access to the IBM source code?

We're working on the instructions [for specifying the terms of Fujitsu's access] and hope to have those done late this year or early next year. We would hope to have the rules [for the operation of the secured facility] done in the first part of next year so the secured facility could be opened, possibly, in the second quarter.

When will you determine Fujitsu's payments to IBM?

Once we get the secured facility put to bed, then we'll work on the access fees, the cost for Fujitsu to access and derive whatever it is we allow them to derive from the IBM information.

What they will get is everything that a customer normally gets, plus source code. The instructions will carefully spell out what they can derive from that, and it will be largely interface type of information. It won't be detailed programs or detailed design logic flowing out of the secured facility.

They can look at the source code, but they can't take it with them?

That's right. They can look to verify what the communications interfaces are between that program and other programs. It's a lot like a black box, where you know what the connections are and what they do, and then the black box does something. If someone knows those interfaces and knows the function, he should be able to have a reasonable opportunity to independently develop a similar kind of thing.

The phrase "reasonable opportunity" is a key concept to us. People say Fujitsu will be able to be compatible. Maybe they will, and maybe they won't.

We're trying our best to have Fujitsu have a reasonable opportunity, with independent development, to remain compatible.

Compatible, of course, hardly ever means the same thing to everybody. Will a Fujitsu customer be able to put the pieces of the puzzle together to get an MVS/XA that is part of both? That's not very likely. However, as to application programs, they would certainly have a reasonable opportunity there.

How does the access fee differ from the lump sum that Fujitsu will pay?

The access fee is the fee they will pay in the future for access to this IBM material. It's not inconceivable that it will be a one-time, paid-up license to use this information for the lifetime of the secured facility. We haven't yet begun to explore how we will set that fee. It would seem reasonable that it would be some part of the cost that IBM expended here; that would be one part of the equation.

IBM will come back and say, "They ought to pay us 50% of our research and development budget" [approximately $5 billion]. And Fujitsu will come back and say, "We think about a nickel a shot is right." That's the kind of extreme argument we'll get.

Fujitsu will have the opportunity to pick and choose. It's not just one price to have access to everything. If they want to look at VTAM, for example, we'll set individual prices on these major items.

John L. Jones

Are future IBM products — products under development — included in the secured facility access?

Not unless they're successors to the subject software list.

How is that distinction made?

It would have to be something that is functionally similar and intended as a successor. If there's a new VTAM, that would be included. But if they come out with a totally new product, a new data base system, for example, that wouldn't be on the list.

And you have the power to make that decision?

Oh, yes. Whatever it takes to resolve these disputes. IBM will tell us why [a product] shouldn't go into the secured facility, and Fujitsu will tell us why it should, and we'll resolve it. Arbitrators have amazing scope of power and authority in this issue.

So an MVS/XB would be a successor product, and, therefore, Fujitsu would have secured facility access to it?

I would say so.

IBM has started to put more instructions into microcode, which is not covered by your resolution. Could this setup encourage IBM to do more of that?

I don't have much doubt that we would get involved with that. We have been concerned about the migration problem — not just microcode. If that became an issue, we would get involved to try and maintain the level field, so to speak.

If you were detached from this dispute and back running the MIS department at Norfolk Southern, what would your reaction be?

Like everyone else, I'm in favor of competition. But I always made sure that, for the sake of competition, I didn't wind up being worse off. I used a lot of non-IBM equipment, but when it came to the mainframes, I was very conservative about untested hardware or software. With my particular philosophy, I would have probably said, ho hum.

What's at stake [in MIS] is not just a few dollars over an operating system. It's a lot of dollars in a railroad operation — not to mention a career pattern change if you mess up. So I'd read about it in *Computerworld* and go on to the next article.

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Heat

FROM PAGE 1

it often involves trades in both the Merc's stock index futures market and the NYSE.

Program trading loosely refers to the automatic purchase or sale of stocks by traders who are using computers programmed to react to specific market conditions.

The complex transactions are made by large institutional investors and major brokerage firms, in amounts ranging from $5 million to more than $100 million at a time, according to experts.

Controversial type

The most controversial form of program trading is stock index arbitrage, which involves simultaneously selling stocks and buying stock index futures.

The goal is to profit from the small difference, or spread, between the value of the stocks and the index futures — a tactic called arbitrage.

The transaction begins when a trader buys a stock index futures contract, such as the Merc's popular Standard & Poor's 500 (S&P 500) index, and simultaneously sells a "basket" of selected NYSE stocks that make up the index.

Later, the program trade is "closed out" by reversing the procedure, selling the futures contract and buying back the stocks.

'Exploiting spreads'

The sophisticated traders "are attempting to exploit spreads that last only a very short time . . . a few minutes at most," said Glen King Parker, chairman of the Institute for Econometric Research, Inc. in Fort Lauderdale, Fla.

Consequently, the traders depend on computer terminals with a steady stream of real-time stock data obtained from services such as Quotron Systems, Inc. and Automatic Data Processing, Inc.

Custom software programs analyze the data and trigger a preprogrammed transaction whenever certain conditions are met, such as a certain spread between the trader's basket of stocks and the S&P 500 futures market, sources said.

The computer allows the trader to have buy and sell orders already written and stored in the computer and then to quickly transmit the multistock orders to market makers for execution, Parker said.

"The software is developed by sophisticated traders with access to large amounts of money who hire bright people specifically to develop and fine-tune that kind of program," said James R. Barker, president of Financial Management Systems, Inc., a Boston-based firm that sells portfolio management software.

Just a matter of time

The emergence of speedy computerized trading and futures investments that require little upfront capital made it easy for portfolio managers to make a quick exit from the stock market, Barker said. It was just a matter of time before something triggered a market meltdown, he said.

But Merc officials said S&P 500 futures-related selling on the NYSE represented less than 10% of the NYSE's record 605-million-share volume seen on Oct. 19.

The Commodity Futures Trading Commission, which regulates the futures market, reported that index arbitrage was less prevalent that day than was another type of computer-assisted trading called portfolio insurance.

With portfolio insurance, managers of large stock portfolios can cut their financial exposure in a falling stock market by selling stock index futures without touching their regular portfolios.

The futures industry fears that program trading in general, and stock index futures in particular, will become a scapegoat for the market's Black Monday and will be subjected to new regulation after several federal investigations are concluded.

'Naive and irresponsible'

"Those who ignore economic conditions and world tensions and blame traders and trading techniques for the market decline are at best naive and at worst irresponsible," Merc officials said.

But critics said program trading adds more volatility to the stock market because it forges a link between the risky futures market and the more conservative stock market, which have different trading rules.

Stock traders, for instance, must put up at least 50% of the purchase price when they buy on margin, whereas index futures can be bought with less than 10% up front.

The Institute for Econometric Research's Parker said program trading played a role in the market crash but that the real problem is that federal regulators have allowed the creation of stock index futures contracts, which are abstract, derivative instruments that are unrelated to the real value of the underlying stocks.

"With the benefit of hindsight, [federal regulators] might wish they had never started it," Parker said.

"In the end, we believe that regulators will find it next to impossible to ban or effectively regulate computerized trading," he added. "If you said you can't do it with a computer . . . then some people would do it in their head."

Tale of the tape

Bellwether computer industry stocks experienced a roller coaster ride since closing on Oct. 16 before the big crash

	Oct. 16	Oct. 19	Oct. 20	Oct. 21	Percent change Oct. 16 to 21
IBM	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
DEC	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Microsoft	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Lotus	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Apple	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Compaq	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Unisys	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Computer Associates	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
AT&T	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Cullinet	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

CW CHART: MITCHELL J. HAYES

Coast system disrupts trades

BY JEAN S. BOZMAN
CW STAFF

LOS ANGELES — Despite a barrage of stock market transactions, the Pacific Stock Exchange faced a breakdown of its 5-year-old front-end communications processor Oct. 21, the president of the exchange's data processing subsidiary said last week.

The technical problem was fixed within an hour, exchange MIS managers said, but trading was disrupted from 7 a.m. until noon Pacific time. Meanwhile, electronic orders were diverted to the Midwest Stock Exchange in Chicago, which clears all Pacific Stock Exchange trades.

The communications processor, a CC 80 from Computer Communications, Inc. in Torrance, Calif., was blamed for the failure, which caused the exchange to close for five hours. The processor is one of four CC 80s used by the exchange here and in San Francisco. "Once we turned off the order flow, we couldn't turn it back on," said John Parady, president of the exchange's Data Processing, Inc. subsidiary.

A CC 80, one of two that support trading here, failed to halt incoming orders once its input queues had filled up, Parady said. "It didn't halt or send out a warning — it just kept going," he added. "I suspect that the designers of the system software, which was a custom installation, thought the queues were so big that they would never fill up."

Throughout that week, the exchange was processing as many as 26 million shares a day. Normal volume is in the range of 10 million shares traded, exchange spokesmen said.

"The capacity of this front-end processor is limited, because it is an older unit," Parady said. Computer Communications shipped its first CC 80s 10 years ago, the manufacturer said last week. "I had already begun a project to replace these units when the stock market surges hit," he said.

MIS braces for stock aftershock

BY DAVID A. LUDLUM
CW STAFF

Top MIS executives are weighing the possibility that their organizations will suffer reverberations from the recent stock market collapse.

"There are discussions here, obviously, on that. I can only assume there are discussions elsewhere," said Daniel Cavanaugh, senior vice-president for MIS at Metropolitan Life Insurance Co.

For most MIS executives, the likelihood that the market turmoil will shake up their operations depends on whether it touches off a broad economic slowdown, a subject of disagreement among economists.

Given such a slackening of the economy, some managers expect budget tightening throughout their companies. Others, however, assume their businesses enjoy a degree of insulation.

Possible cutbacks

Cavanaugh outlined several ways in which MIS organizations might respond to tighter budgets while avoiding onerous consequences:

- Postpone capital and development projects deemed less crucial than others on the basis of expected payback.
- Cancel replacement or upgrading of hardware, including personal computers.
- Drop consultants, which does not call for expensive severance payments or the difficult rebuilding that laying off permanent staff might require.

However, MIS cost-cutting might not always be so orderly, in the view of Michael Vitale, an assistant professor of business administration at Harvard Business School. "I think most MIS departments are very poorly positioned to cut back," he said.

From lack of effort or competence, managers might respond to orders to trim costs by eliminating key services, imposing across-the-board cuts or "they pick the project that isn't going well anyway or that was proposed by the lowliest person in the organization, whom they didn't like," Vitale said.

Most executives contacted last week are taking a wait-and-see attitude toward any fallout from the stock market collapse.

At AMR Corp., the market slide has not affected demand at American Airlines or its Sabre reservations business, and officials do not expect an economic downturn, said Al Becker, director of external communications.

Pressing on

But even if the market slide prompted a recession, Becker said, AMR would try to continue expanding the Sabre business for the following three reasons:

- Sabre tends to be less affected by economic swings than the airline business, partly because it is less dependent on consumer travel.
- AMR wants to expand Sabre's market share, particularly overseas, even during a recession.
- The firm has the financial stability to expand in a downturn.

"We really don't see those major programs being altered to any significant extent unless there is some major event, and we don't forsee that happening," Becker said.

No repercussions are expected at The Sun Co., an energy resources holding company in Radnor, Pa., according to Dudley Cooke, general manager of the Information Systems Division.

No reaction is imminent at Scott Paper Co., said Darwin John, corporate vice-president for information systems.

"The paper business isn't as susceptible to economic swings. People buy our product during good times or bad," he said. "Scott made a business decision that we are going to proceed with our business strategy, and let it unfold. With that business decision, information systems line up behind that."

Buybacks planned as market settles

BY CLINTON WILDER
CW STAFF

IBM led a long list of computer industry vendors that last week announced plans to repurchase their own stock in the wake of the recent stock market crash.

IBM said it would spend up to $1 billion "from time to time" on the repurchase plan. Although the announcement came when IBM and virtually every other vendor had seen its stock prices plunge, it was not an uncommon business move for Big Blue; it was the fourth repurchase plan announced by the industry leader since May 1986.

Since that time, IBM has bought some 19 million of its shares for about $2.5 billion. IBM currently has cash and securities reserves of approximately $6.8 billion.

At Thursday's closing price of 120¼, IBM could purchase up to 8.3 million of its shares for $1 billion. Both NCR Corp. and National Semiconductor Corp. announced plans to buy back up to 10 million shares of their stock.

Other vendors making similar announcements last week, with the maximum number of shares each intends to repurchase, were the following:

- Novell, Inc., 1.3 million shares.
- Cray Research, Inc., three million shares.
- Datapoint Corp., 200,000 shares.
- Ask Computer Systems, Inc., one million shares.
- American Software, Inc., 300,000 shares.
- Morino Associates, Inc., 200,000 shares.
- EMC Corp., 500,000 shares.
- Alpha Microsystems, 200,000 shares.

Cobol review gets rewrite

BY CHARLES BABCOCK
CW STAFF

The public review of proposed additions to Cobol 85 spawned enough suggestions and critical comments to prompt a technical committee of the American National Standards Institute (ANSI) to revise the proposal.

As a result, the altered proposal — the first test of a process to add features to Cobol short of a full revision — will undergo a second public review early next year, committee members said.

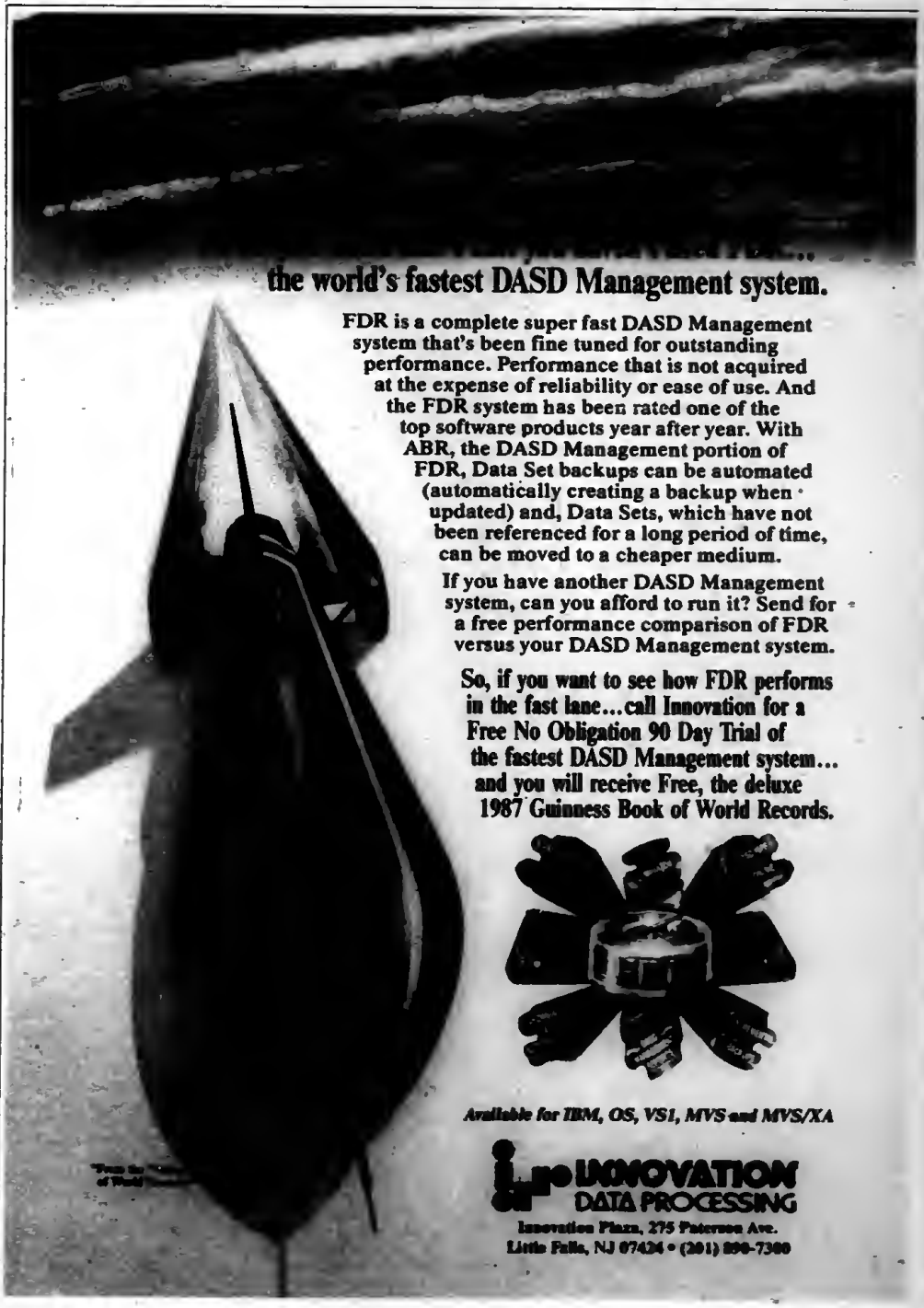
At the same time, the X3J4 Technical Committee has decided to request permission from its parent, the ANSI X3 Committee, to get started on the next complete revision of Cobol, currently dubbed Cobol 9X. Eleven years elapsed between the revision of Cobol 74 and Cobol 85 while the X3J4 panel considered debate over the language.

The X3J4 Technical Committee is composed of representatives of large Cobol users, hardware manufacturers, software developers and consultants in the Cobol field.

The committee also wants to propose a screen management facility for Cobol that would standardize the way users and vendors manage the language's terminal interface.

In one of a handful of revisions to the addendum proposal, X3J4 committee members agreed to accept a suggestion by IBM and Roger Knights, of SPC Systems U.S.A. in Seattle, to replace implicit subscripting in Cobol with the explicit reserve word ALL. The word would make it clear that an operation against a Cobol table should be conducted against all elements if none are specified individually, committee Chairman Donald A. Schricker said.

Public review comments rejected by the committee included a recommendation for bit manipulation from David Rutan, a senior programmer analyst at MacMillan Bloedel in Atlanta, and a suggestion for a Gregorian-to-Julian date conversion routine from Bob Richardson of Builders Emporium in Diamond Bar, Calif.



Unisys shuffles mainframe cards

Replaces upper-end A15 series, announces entry-level A12E system

BY JAMES CONNOLLY
CW STAFF

DETROIT — Unisys Corp. this week will launch the third revision of its premier mainframe line in three years with the introduction of replacements for its A15 series of large-scale systems.

The A17 series is scheduled for formal introduction at the Unisys large systems users group conference, Cube, in New Orleans Nov. 9-12 and is described in a letter being mailed to target customers today.

Unisys is also set to announce the A12E, an entry-level version of its A12 machine.

In briefings last week, Unisys officials said the A17 models provide about 20% higher performance than comparable A15 models, due primarily to the use of the firm's Resource Management Module, which off-loads I/O tasks from the CPU.

The A17 models are scheduled for availability in May 1988, at which time the A15 models will no longer be offered to new customers. Ron Kelsey, Unisys program marketing manager for mainframe systems, said upgrades will be available both within the A15 line and from the A15s to the A17s.

A system history

Unisys introduced the A15 line in March 1985, began shipments later that year and enhanced the line this past April, when the company installed its MCP/AS operating system.

Like the A15, the A17 was designed for large data processing applications, particularly those involving on-line data base transaction processing, according to Unisys. Target customers include the 400 to 500 users of the A12, A15 and earlier Unisys B7000.

"The major difference between the A15 and A17 lies in the I/O processing area. A new device called the Resource Management Module allows for a greater amount of processing to be done outside of the central processor. Essentially, we are giving back to the customer 20% of his CPU cycles," Kelsey said.

The announcement of the A17 upgrade demonstrates Unisys's commitment to continue the Burroughs Corp. architecture into the future, said Herman Schuler, director of data center services for Westinghouse Broadcasting, Inc. in Milford, Conn., and operator of an A15F uniprocessor. "As we grow our business, this new system will give us someplace to go," he said.

Industry analyst Van Weathers of the San Jose, Calif., market research firm Dataquest, Inc. said several vendors have off-loaded I/O tasks from their CPUs after I/O became a bottleneck in their large systems.

Kelsey said users can achieve further performance gains of up to 200% in I/O-intensive applications through the use of a disk-caching feature that was implemented in software in the A12 and A15 but will be a hardware feature on the A17.

The five models of the A17 line basically parallel the A15 family. The new models range from the uniprocessor A17F, which costs $3.13 million and is said to provide a 19% performance gain over the A15FX, to the $8.99 million, four-CPU A17N, which reportedly provides a 26.3% performance gain over the A15NX.

Each A17 memory module can support 288M bytes of memory, compared with the 192M-byte limit of the A15s. The three new high-end models, the A17J, A17L and A17N, feature total memory capacities of 576M bytes, which can be partitioned for multiple tasks.

Unisys said the A17 is object code-compatible with all A series systems, with the A17 being 144 times as powerful as its entry-level A1 models.

Based on the company's performance claims, the A17F would be rated at about 20 million instructions per second (MIPS), and the A17N would perform in the 72-MIPS range. Unisys positioned the A12E and A12 against the lower end of the 3090 series, the 3090 Models 120E and 150E.

Kelsey said an upgrade from an A15 to an A17 should involve a weekend of work, in which a Resource Management Module is installed and the CPU is altered to support that module.

Upgrade pricing depends on the processor. It costs $588,000 to upgrade an A15FX to an A17F and $1.6 million to upgrade an A15NX to an A17N.

A-frame blueprint

Release of A series stretches out capabilities of Unisys line

A12E	5.6	280	24 to 72	$395,000
A12	8.4	420	24 to 144	$1.3M
A15FX	16.8	840	24 to 96	$2.9M
A17F	20	1,000	48 to 288	$3.13M
A15IX	31	1,550	24 to 192	$4.57M
A17H	38	1,900	48 to 288	$4.43M
A17J	38	1,900	48 to 576[3]	$5.66M
A15KX	44.5	2,225	24 to 192	$6.12M
A17L	55	2,750	48 to 576[3]	$7.13M
A15NX	57	2,850	24 m t92	$7.6M
A17N	72	3,600	48 to 576[3]	$8.99M

[1] Million instructions per second — CW estimates based on Unisys performance claims.
[2] Unisys rating system in which A17F equals 1,000.
[3] CPU and memory can be partitioned.

CW CHART

DEC on DB2 SQL track

BY CHARLES BABCOCK
CW STAFF

MAYNARD, Mass. — Digital Equipment Corp. recently announced a version of its SQL for the VAX that includes a step toward greater compatibility with IBM's DB2 SQL but falls short of compatibility with the ANSI standard, which is now almost a year old.

At the same time, DEC continues to plow development effort into its proprietary relational data access and manipulation language, Relational Data Base Operator, which first appeared three years ago with DEC's relational data base management system for the VAX, Rdb/VMS.

The relational data base market for the VAX is divided between Relational Technology, Inc.'s Ingres, Oracle Corp.'s Oracle and Rdb. Between 4,300 and 4,400 Rdb licenses have been sold, DEC officials said for the first time. Both Relational Technology and Oracle claim more than 6,000 licenses for their respective DBMSs, spread over different processor brands.

Bob Randolph of International Data Corp. said DEC's slowness in meeting the ANSI standard and its continued commitment to Relational Data Base Operator indicate it is "dragging its feet on SQL."

Nevertheless, VAX SQL Version 1.1 adds some ANSI-standard features absent from Version 1.0, introduced in January, and adds C to the languages that can be handled by precompilers in VAX SQL, according to James A. Steiner, product manager at DEC's data base systems group in Nashua, N.H.

In addition, the dynamic interface in VAX SQL now supports all data types included in the Digital Standard Relational Interface architecture, which supplies the interfaces between its relational products and other DEC or third-party products. It also supports the Decimal and scaled data types used by DB2.

That means, Steiner said, that an application written for Rdb will invoke data types and can use dynamic — or generated at run time — SQL queries that work in a DB2 application. He stopped short of saying Version 1.1 allows application portability between Rdb and DB2, but he did say the changes will make it easier to convert an application to DB2 or vice versa.

VAX SQL reportedly will be available this month for $1,090 on the Vaxstation 2000 and $26,100 on the VAX 8800. Purchased with VAX Rdb/VMS runtime, it is priced at $1,770 on the Vaxstation and $42,480 on the VAX 8800.

DEC

FROM PAGE 1

commercial environments targeted by IBM for mainframe installations.

DEC already offers four- and eight-CPU configurations based on the 8700. They are known as the VAX 8974 and the VAX 8978 and were introduced earlier this year.

However, while the CPUs of the 8974 and 8978 are tied together through Vaxcluster technology, the system that awaits announcement is reportedly tightly coupled with shared memory, the same manner in which the multiple CPUs of the 8800 and the VAX 8350 are configured.

The combination of a tightly coupled architecture and symmetrical processing features under VMS Version 5 could help DEC overcome what analysts have seen as two of its shortcomings in the high-performance market.

Analysts have estimated that the Vaxcluster approach and master-slave processing, in which one CPU is primarily responsible for managing the system while a second CPU might be underutilized, can mean users achieve less than 60% efficiency on the second and subsequent CPUs added to a system.

No pricing figures are available for the new system, although the cost will be approximately $1.4 million if DEC adheres to the pricing structure used for the 8700 and 8800. The 8974 costs $2.6 million; the 8800, at 12 million instructions per second (MIPS), costs $885,000.

Analyst Bob Randolph of Framingham, Mass.-based market research firm International Data Corp. said DEC has been working on symmetrical multiprocessing for 10 years. With the technology, all processors perform equally on any given task, Randolph said.

He said the symmetrical processing feature would require VMS 5.0 and that the new release of the operating system would be announced with the four-CPU system.

Transaction processing

According to various industry observers, VMS 5.0 will also feature enhanced transaction processing capabilities that are intended to strengthen DEC's position in commercial markets.

The internal DEC memo said the four-CPU system is planned for release in early December but that it could be moved back to late January. Randolph said a late January rollout is more likely.

Analyst John Logan of Boston-based market research firm The Yankee Group said he was surprised by the December time frame. "We've been watching for it for months. I was predicting a first-quarter announcement, but if it's December, they may be ahead of schedule," he said.

However, Logan also speculated that DEC may be behind on VMS 5.0 development and that the company might announce the four-CPU system without having VMS 5.0 ready.

The DEC memo also said the new system will provide 18 to 22 times the performance of DEC's longtime base for measurement, the VAX-11/780, which is generally rated at 1 MIPS.

A 22-MIPS VAX apparently would be positioned against the middle of IBM's 3090 mainframe line, falling between the 15.6-MIPS uniprocessor 3090 Model 180E and the 31.2-MIPS dual-processor 3090 Model 200E.

One DEC rival in the superminicomputer market, Prime Computer, Inc., announced earlier this year a dual-processor system, the 6550, scheduled for delivery by year's end. The machine makes comparable performance claims, with a 23.6-MIPS rating.

When Prime announced the system, however, several observers claimed the MIPS ratings assigned to DEC and Prime systems should be cut in half for comparisons with IBM processors because of the different ways the companies define an instruction.

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Motorola loads up 68030 chip

BY ALAN ALPER
CW STAFF

NEW YORK — Motorola, Inc. last week began shipping its second-generation, full 32-bit micoprocessor — the 68030 — which the company said will enable computer vendors to offer powerful 32-bit systems with prices starting at $2,000.

The 68030 — available initially as a 20-MHz device — offers twice the performance of its predecessor, the 68020, and is 20% to 40% faster than the Intel Corp. 80386 32-bit microprocessor, according to a study done by Unisys Corp.

All software applications developed for previous 68000 family microprocessors will run on systems designed around the 68030, Motorola said.

The new microprocessor is claimed to be the first to have on-chip data and instruction caches, an internal parallel architecture and dual modes of address. Motorola said systems designed around the 68030 could be offered starting at $2,000 because they would not require extra components such as graphics coprocessors, memory management hardware and static random-access memory chips.

On hand to help unveil the 68030 were representatives of Apple Computer, Inc., NCR Corp., Northern Telecom, Inc., Sun Microsystems, Inc. and Unisys. All said they intend to unveil systems based on the 68030 but declined to provide a timetable. Last month, General Automation, Inc. disclosed plans to ship in January a 68030-based system running Pick Systems' Pick operating system and supporting up to 256 users (CW, Oct. 19).

More than 100 manufacturers offer 68000-based computers, Motorola officials said. The firm has shipped more than 10 million 68000 family microprocessors, 1.2 million of which are 68020s.

Motorola also disclosed that it will begin sampling a 25-MHz version of the 68030 next month. In addition, the company said it has begun development of its next-generation microprocessor, the 68040.

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Characters/Line	136-198	136-198
Lines/Page	66-88	66-88
Tractor	Yes	Yes
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Protocol	5225	5223

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Aspen

CONTINUED FROM PAGE 1

able in on-line transaction processing environments. As one engineer described it: "Aspen was never a complete operating system. It was a set of techniques that was under a pure research environment."

As a result of the September IBM-Fujitsu arbitration, Fujitsu could theoretically develop its own compatible alternative to MVS. Observers said they wonder if Amdahl decided to move quietly out of Fujitsu's way by dropping Aspen.

"I know it looks as though the timing of the IBM-Fujitsu litigation would have an impact on our decision, but it does not," Zemke said. "There is absolutely no connection. We were reevaluating Aspen 10 months ago.

"After intense evaluation, we have decided that we would have significantly more success with Unix," he added. "What we will do is combine the best of Aspen technology and develop a single operating system with Unix. We will focus our resources and put together a single development team."

Amdahl's 580 series mainframes support operating systems that include Amdahl's proprietary version of Unix, dubbed UTS, which is based on AT&T's Unix System V and IBM's MVS and VM.

'A good move'

Analysts at the meeting considered the decision to merge the project under Unix development a sound one. "Since Aspen was always an R&D project, it's a good move to rescue whatever you can," said Bob Djurdjevic, president of Annex Research, Inc.

John Jones of Montgomery Securities agreed. "It was the right move to bundle Aspen under an industry-standard operating system," he said. "If Amdahl had gone ahead with its own proprietary operating system, the company would have met with tremendous market resistance. Repackaging makes a lot of sense."

According to Zemke, both technical and marketing issues led senior management to cut the project. "It was not a controversial decision," he stressed. "Given the momentum and success we have had with Unix, it made more sense to bring the two independent efforts together."

While Zemke declined to say what parts of Aspen technology will be used to enhance its existing UTS operating system, he said one of Aspen's key strengths is "rich communications capabilities with the SNA world," referring to IBM's Systems Network Architecture.

The rollout of the mainframe UTS operating system, which has yet to be named, will be ready sometime in 1988, according to Zemke.

The native operating system will suit the scientific engineering environments and possibly office automation applications for the future, he said. The 60-member Aspen development staff has already been merged with the Unix development team for a total of 250 people.

Zemke stressed that Aspen was originally a research project "to see what we could do with our own operating system." It was Amdahl's attempt to build a suitable operating system for the IBM 370 architecture; it was never Amdahl's strategy to go head-to-head with IBM's MVS, he added. "You have to understand that our fundamental charter is to be totally committed to MVS compatibility."

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BBN Butterfly systems perch on Unix

BY STANLEY GIBSON
CW STAFF

CAMBRIDGE, Mass. — Moving from specialized scientific and engineering markets to the general-purpose user arena, BBN Advanced Computers, Inc. announced last week a Unix-based line of Butterfly parallel processing systems.

The GP 1000 family is modularly expandable from one to 256 processors, performing from 2.5 million instructions per second (MIPS) to 600 MIPS.

In addition, BBN announced the Butterfly Plus, which replaces the current Butterfly 1 line, and the RT 1000, a real-time parallel processing machine. Current Butterfly 1 users can upgrade to the Butterfly Plus, which is compatible with previous Butterfly software, according to the vendor.

The GP 1000, available in March, uses the Mach 1000 version of Unix developed at Carnegie-Mellon University and adapted to parallel processing, the vendor said. The GP 1000 series uses the 2.5-MIPS Motorola, Inc. 68020 microprocessor and floating-point coprocessor.

The system is offered with 500M- or 700M-byte disk drives and a 25M-byte tape drive. The GP 1000 uses shared memory, which can be dynamically allocated to specific processors. A 30-processor 75-MIPS system with 120M bytes of main memory and 1.4G bytes of disk, tape system and operating system software is priced at less than $500,000.

BBN aims to sell the new system to commercial users, including manufacturing companies. Other potential uses are financial modeling and chemical and seismic analysis, BBN President Paul Castleman said. "We're not going to sell on a shotgun approach," he added, indicating that Fortune 1,000 companies with specific needs for such systems will be targets.

Castleman announced a software development agreement with Resource Management Systems to design applications for financial portfolio management, manufacturing scheduling and other uses. He also announced an agreement with Verdix Corp. to port the Ada language to the GP 1000.

Omri Serlin, a parallel processing analyst at Itom International, Inc. in Los Altos, Calif., said that although the system uses the Mach 1000 version of Unix, "You can't just take a Unix program off the shelf and expect it to run with no problems." Serlin explained that existing software would have to be adapted to run on the system. "But it is better to be close to Unix than to have a proprietary system," he added.

Like the GP 1000, the Butterfly Plus uses the Motorola 68020 processor, which improves performance from 1 to 2½ MIPS per node compared with that of the Butterfly 1, which is based on Motorola's 68010. Improving performance and boosting the speed of the system's internal switch by 20% results in a 100% improvement in price/performance.

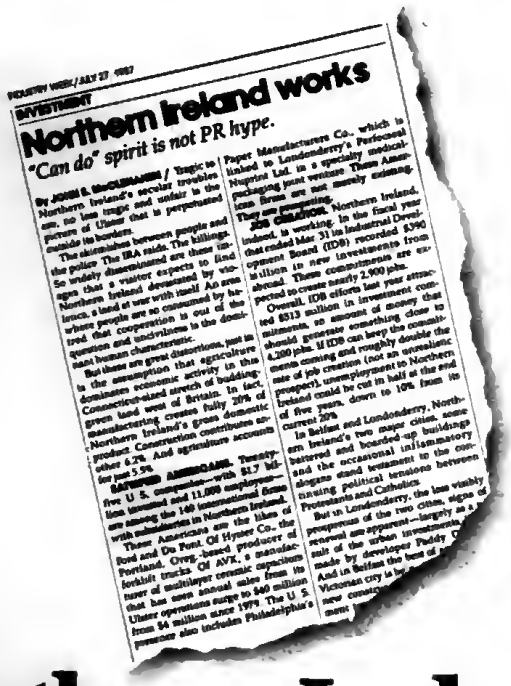
The Plus model uses the Chrysalis operating system, as did its Butterfly 1 predecessor. The system is scheduled to be available for delivery next month. A 30-processor model capable of running at 75 MIPS with 120M bytes of memory and operating system software is priced at about $400,000, the vendor said.

Like the GP 1000, the Butterfly Plus can grow from one to 256 nodes and is capable of a maximum of 600 MIPS.

The RT 1000, which should be available in late 1988, is aimed at what BBN officials called an expanding commercial market for real-time parallel processing.

The RT 1000 uses the PSOS real-time operating system but also supports Mach 1000. It is possible to run some nodes under Mach 1000 and others under PSOS, the vendor said.

Upgrading from the Butterfly 1 to the Butterfly Plus costs about $6,000 per node; to convert a Butterfly Plus to a GP 1000 costs about $40,000.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Orion's SNADS receives C legs

BERKELEY, Calif. — Orion Network Systems, Inc. announced last week a Systems Network Architecture Distributed Services (SNADS) software product that can be ported to any computer supporting the C programming language — including IBM's Personal System/2 with that firm's OS/2 Extended Edition operating system, Orion said.

Unlike IBM's SNADS offering, Orion's SNADS Facility can work outside IBM's CICS and Distributed Office Support System, Orion President Paul Rampel said.

"You can use our SNADS directly with IBM's VTAM LU6.2 product as soon as it is available," Rampel said.

Orion will market its SNADS Facility to software and hardware vendors and corporate users who want to link non-IBM systems to IBM's LU6.2-based document distribution system, the vendor said.

Orion said the facility's first purchaser is Honeywell Bull, Inc.

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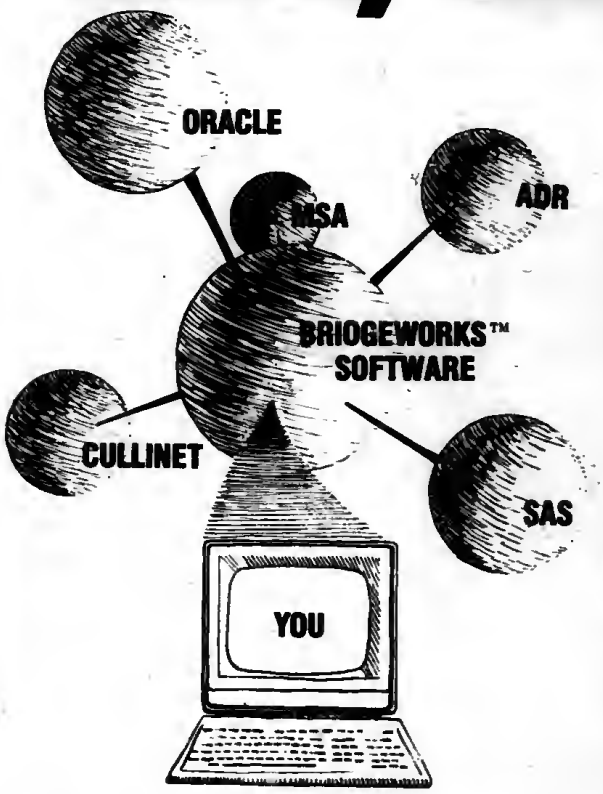

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Unix gets scattered applause

But interest grows, with smaller firms leading the charge

BY ALAN ALPER
CW STAFF

NEW YORK — Commercial acceptance of Unix, while on the rise, seems to be limited to small to medium-size businesses and to departments within larger companies, according to users and vendors attending the Unix Expo here last week.

Many of the 16,000 attendees at the fourth annual gathering of Unix devotees were software developers seeking unexploited niches in the growing commercial Unix market. Their attraction to Unix is self-evident: The market for Unix business applications is expected to grow from $2.8 billion last year to $10 billion by 1990, according to market research firm Dataquest, Inc. That represents a 28% compound annual growth rate.

"Unix is not a dirty word anymore," noted Dorris Wollery, manager of technical services at Unisource Software Corp., a Cambridge, Mass., developer of office automation applications. "In 1983, most people did not know what Unix was; today they want to hear what you have to say."

Unisource has had success selling its applications to law firms and government agencies — the initial batch of nontechnical users to flock to Unix. "Unix is filtering into the commercial market," Wollery said. "It's happening more and more."

Most of the commercial interest in Unix centers around its portability, which allows customers to escape getting locked into any one vendor's hardware while also allowing them to grow from low-end microcomputers, departmental processors and mainframes to Cray Research, Inc. supercomputers.

In addition, Unix's strength as a development environment and its inherent multitasking and networking capabilities are also appealing to many smaller firms and departments within larger companies in the financial services, manufacturing and health care industries, observers said.

"It's the relational data base management system like [Relational Technology's] Ingres and [Informix Software's] Informix that are driving the growth of Unix in the commercial area," said Kent Godfred, marketing manager at Sequent Computer Systems, Inc., a Beaverton, Ore., maker of Unix-based systems featuring a parallel architecture. "A number of our commercial customers, one hotel and an insurance company made their decision to use our hardware platform based on the DBMS they selected."

Cop-Flex, Inc., a Baltimore maker of power transmission equipment, switched from an IBM 4300 to an AT&T 3B2 and an AT&T 3B15 a couple of years ago to save money and provide better controls, noted Cliff Hartung, business systems consultant at Cop-Flex. "We picked the software that we wanted and then looked for hardware," he recalled. "Unix seemed the way to go."

Cop-Flex's former parent company recently spun off the manufacturer as an independent firm, causing Hartung and his associates to seek software to help with administrative functions. "A lot of our processing had been turned over to ADP," he said, referring to Automated Data Processing, Inc. "We're here at the show looking for software to help pull a lot of it back in-house."

Standing pat

Smaller firms running Unix on microcomputers seem content to stay the course. Microsoft Corp.'s MS OS/2 multitasking operating system for PCs — slated for delivery later this year — remains an enigma to many Unix users.

David Vrabic, a systems engineer at Airpage, Inc., a manufacturer of radio paging equipment in Albany, N.Y., is one Unix user willing to look at MS OS/2. But he said he will remain skeptical of its capabilities until it is unveiled in total, including its Presentation Manager, a development not expected until late next year. "I've been in this business for 25 years, and we've been living with vaporware since transistors had wooden leads," he quipped.

The many varieties of Unix marketed by a number of vendors is one factor limiting the operating system's overall success, observers said. Still, work on standards continues: the Posix standard is in its final stages of development, and AT&T is working with Sun Microsystems, Inc. and Microsoft to merge the University of California at Berkeley's Unix 4.2 and Microsoft's Xenix with AT&T's Unix System V, Release 3. So far, such efforts have not been enough to convince MIS departments that enough standards exist for a full embrace of the operating system.

Yet, it is the departments within larger firms that seem to be leading the charge into the Unix world, according to Raghu Sugavanam, president of Mercantile Software Systems, Inc., a software developer in Morris Plains, N.J. Most departments, he said, are purchasing turnkey systems because they are easier to install and run. "They want an OS-like Unix that can be supported in development and production environments so they can get their applications running faster," he said.

Once Unix is better entrenched, Sugavanam said, control of those departmental systems will revert back to MIS. "It will take time, but it will happen," he predicted.

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Informix unwraps Cray DBMS

BY ALAN ALPER
CW STAFF

NEW YORK — Branching out into the extreme high end of the systems business, Informix Software, Inc. last week unveiled what it said is the first relational data base management system for Cray Research, Inc.'s Cray-2 line of supercomputers.

The Menlo Park, Calif., firm said it has ported its Informix-SQL DBMS, which is based on ANSI-standard SQL, to run under Unicos, Cray's proprietary operating system based on AT&T's Unix System V. The company also ported its application development tools Informix-4GL, Informix-ESQL/C and C-ISAM to the Unicos environment for the four-model Cray-2 line of multiprocessor supercomputers.

"This is significant for the DOEs and DODs [Department of Energy and Department of Defense] of the world, since there was no data base management system for them to use before this," noted Stephen Hill, Informix director of product marketing.

Informix and Cray also signed a three-year joint marketing and sales agreement that gives Informix dial-in access to a Cray-2 supercomputer to maintain and support the DBMS and application development products, Hill said.

Cray opted to work with Informix instead of other DBMS vendors because of the Informix DBMS's ability to handle shared and nonshared memory, Hill said. This was important to Cray even though the Cray-2 was designed with common memory of between 64 million and 256 million words to enable it to run extremely large programs, he added.

Available immediately, Informix-SQL for Unicos is priced at $245,000; Informix-4GL lists for $295,000; Informix-ESQL/C costs $150,000; and C-ISAM is priced at $50,000.

Ingres tied to Dbase, RMS

ALAMEDA, Calif. — Relational Technology, Inc. is scheduled to release today two gateway products that link its Ingres relational data base management system to Ashton-Tate Corp.'s Dbase and Digital Equipment Corp.'s file management system, RMS.

The two products are part of a broader Relational Technology strategy to link the Ingres environment to existing data base products. Relational Technology will reportedly follow the products introduced today with gateways to IBM's DB2 and IMS, although the company did not provide shipment dates.

Ingres Dbase Gateway would allow Ingres users to access Dbase data on a personal computer with the Ingres SQL access method. To the user, the data would appear to be relational data residing in tables. With this capability, users would be able to combine relational and nonrelational data for use in the same application, the firm said.

VMS link available

Similarly, the Ingres RMS Gateway will link the Ingres user via the SQL access method to the file management system that runs in the DEC VMS environment, the company said.

Both products can be used on a single system or in the Ingres/Net and Ingres/Star environments. Ingres/Net is the company's networking product to provide distributed access to multiple data bases. Ingres/Star is an implementation of a distributed DBMS.

Ingres Dbase Gateway is slated for delivery in January and has a license fee of $120. Ingres RMS Gateway will be released in December, the company said. Licenses range from $450 for a low-end Vaxstation to $24,000 for high-end VAXs.

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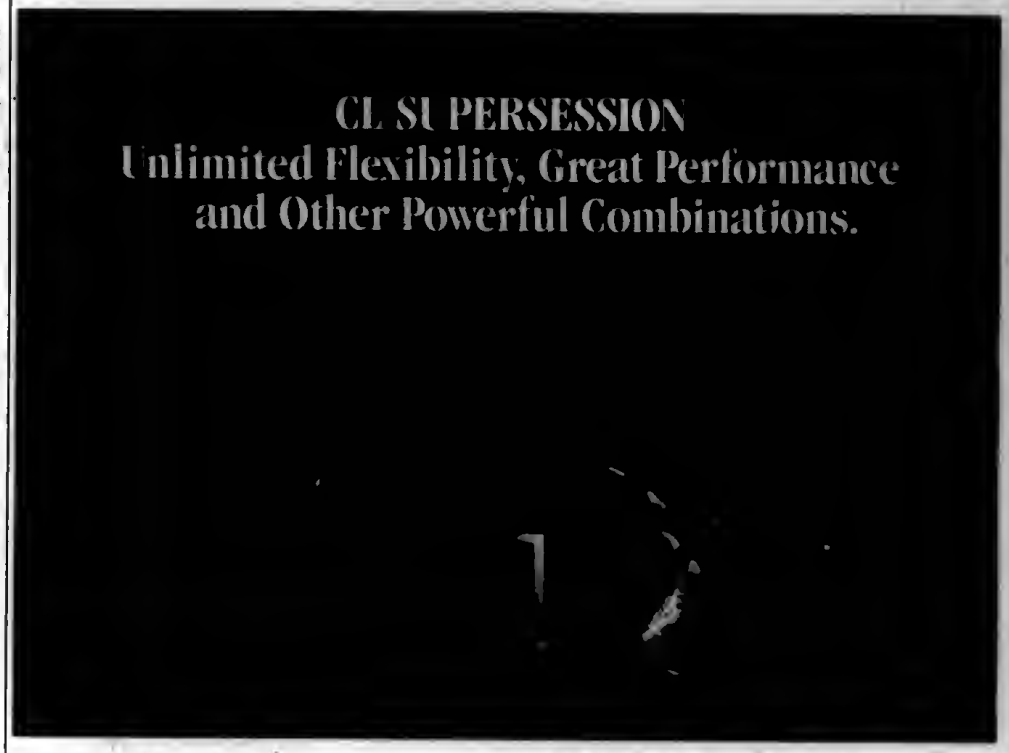

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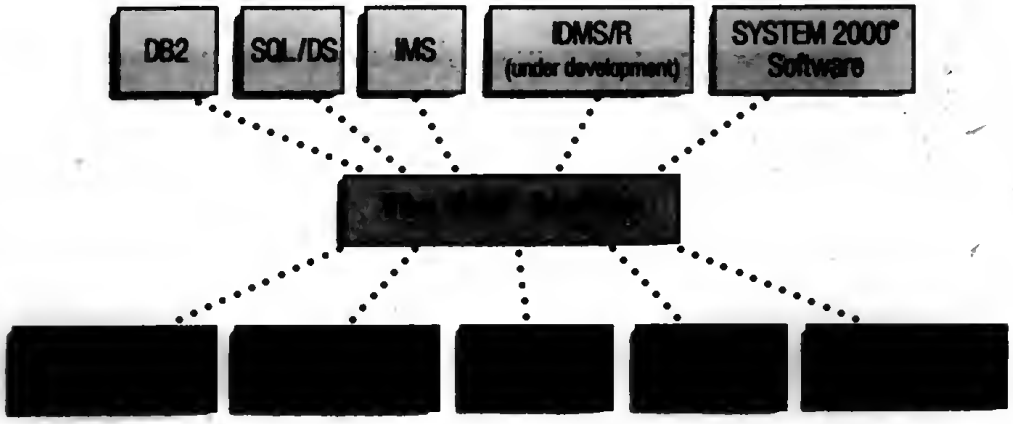

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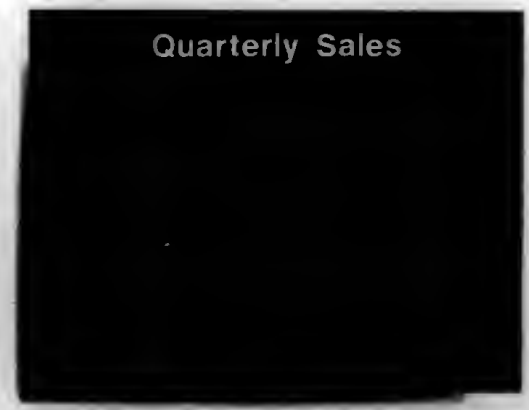

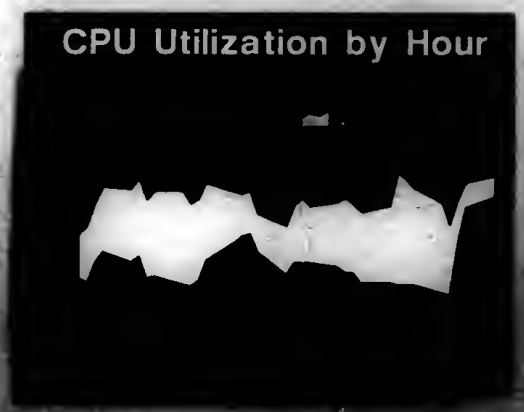

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NAS launches disk drive line

Competes with IBM's latest drive and peripheral offerings

BY KATHY CHIN LEONG
CW STAFF

SANTA CLARA, Calif. — National Advanced Systems last week unveiled two models of its new 7380 disk drive family and three versions of its 7980 controllers, becoming the first plug-compatible manufacturer (PCM) to compete head-on with the latest generation of IBM disk drives and peripherals.

Tentatively priced at 90% of IBM's asking costs, NAS drives and controllers are fully compatible with IBM models, stressed Minh Le, NAS director of worldwide marketing planning, peripheral products. Pricing will be finalized as the products come close to shipping, he added.

NAS again followed in IBM's footsteps by announcing price drops on its existing line of drives and controllers.

Analysts noted that NAS's timing with the IBM introductions is strategically in line with what PCMs have done in the past. "Usually, the PCMs will wait a few weeks after an IBM announcement and will ship their product 12 to 24 months after IBM," noted Louise Biggs, an analyst at Dataquest, Inc. in San Jose, Calif. In early October, Memorex Corp. announced a price cut on its drvies and controllers and added a one-year warranty. It did not announce compatible products, however.

When IBM announced its peripherals in September [CW, Sept. 7], the key improvements were of major importance to users who needed higher speed and more capacity. After two years of rampant rumors, IBM had expanded its line to include new 3380 disk drive models, which are now shipping, and a new 3990 controller line, which will be ready by third-quarter 1988. At that time, analysts and users lauded the features. The high-end 3380 Model K, for example, features an average 16-msec seek time and triple-density, 7.5G-byte direct-access storage. One of the IBM 3990 controller's key features is its 4.5M byte/sec. channels.

NAS has responded to IBM's moves virtually step by step. The NAS disk drives under the Alliance Generation label include the 7380J and the 7380K, both comparable to IBM's 3380 Model J and Model K.

The 7380J also includes 2.5G bytes of memory and an average seek time of 12 msec, like the 3380 Model J. The 7380J is field-upgradable to the 7380K.

The drives will feature single-, double- and triple-capacity disks. They are capable of storing 50% more than the previous NAS AE and BE versions.

Worth the wait?

The drives will not ship until the third quarter of 1988. But Le said past experience shows that users take up to 18 months to make their buying decisions. "Users always want an alternative to IBM," he added. "Our track record of reliability and lower prices will make that difference."

During last week's press briefing, company officials stressed that Nastrack will be shipped with all models. Dataquest's Biggs noted that the Nastrack card, which was announced last month, will make a major difference to users, who in the past were unable to keep track of the cache memory their high-end systems.

NAS also unveiled a controller in three versions scheduled for delivery by the first quarter of 1989: the 7980 Models 1, 2 and 3C. The models, company officials said, will support all 7380 disk drives, present and future. The models come with a one-year warranty similar to the IBM warranty policy.

The most powerful controller in the line is the high-end Model 3C, slated for delivery by the second half of 1989. The controller features an "advance function cache" that offers 4.5M byte/sec. data transfer.

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National Semi faces cutbacks

SANTA CLARA, Calif. — National Semiconductor Corp. said last week it plans to reduce its worldwide work force by about 400 as a result of its recent acquisition of Fairchild Semiconductor Corp.

Although all levels of employees will be affected by the move, the area hardest hit will be field sales, which has the largest overlap, a National Semiconductor spokesman said. Also affected will be Fairchild's Cupertino, Calif., headquarters and its Microcomputer Products Division in Portland, Ore.

The combined company currently has about 38,000 employees, with some 12,000 to 15,000 in the U.S. It has not been determined whether there will be more staff cutbacks in the future, however. "We will continue to review our operations as we move toward integrating the two companies," said Linda Baker, a National Semiconductor spokeswoman.

National Semiconductor acquired financially troubled Fairchild from Schlumberger Ltd. in August after Fairchild's controversial merger agreement with Fujitsu Ltd. collapsed [CW, Sept. 7].

Aldus broadens line with add-in tools

BY STEPHEN JONES
CW STAFF

SEATTLE — Aldus Corp. will try to shed its image as a one-product company this week, introducing at Comdex/Fall '87 a comprehensive Macintosh drawing program and an IBM PC-based package that captures and manipulates video images.

Both products are being positioned as logical add-ins for Aldus Pagemaker upgrades to be released early next year for the Apple Computer, Inc. Macintosh and IBM Personal Computers and compatibles.

Aldus's strategy is to broaden its product line with internally developed or acquired programs that enhance the desktop publishing capabilities of Pagemaker, company officials said last week.

"It's good to know that Aldus isn't putting all their eggs in one basket," said Ed Wong, an analyst with Dataquest, Inc. in San Jose, Calif.

Freehand, the Mac drawing tool developed by Plano, Texas-based Altsys Corp. for technical illustrators, costs $495 and will be available in first-quarter 1988. Snapshot, created by Bioscan, based here, is also priced at $495 and is scheduled to ship in the first quarter of next year.

Sneaking a peek

The Pagemaker 3.0 updates, viewed by *Computerworld* last week, feature support for longer documents, user-defined style sheets, automatic text flow through an entire document and color support.

The products each cost $100 more than the versions they are replacing, with the Macintosh package priced at $595 and the PC version at $795. Upgrades for current Pagemaker users cost $75 and $95, respectively. Both versions of the 3.0 release will be available in the first quarter of 1988.

The Pagemaker PC release requires 640K bytes of random-access memory (RAM), a minimum of 10M bytes on hard disk and a graphics card such as an IBM Enhanced Graphics Adapter. It runs under Microsoft Corp.'a MS-DOS 3.0 or higher and Windows 2.0. The Mac version, which features Apple's new pop-up windows, needs 1M byte of RAM and a hard disk.

Both releases support Adobe Systems, Inc. Postscript-compatible laser printers. In addition, the PC release is packaged with Bitstream, Inc.'a Fontware for custom font generation on Hewlett-Packard Co.'a Laserjet series and other printer control language-compatible printers.

Long considered a favorite among graphics professionals in high-end desktop publishing, Aldus hopes to win over more business-oriented users with the 3.0 releases. Features such as style sheets and embedded business templates were designed to add batch-oriented capabilities to Pagemaker's established layout features, according to Aldus President Paul Brainerd.

Mike Fontana, group leader of microcomputer product evaluation at The Hartford Life Insurance Co., said Pagemaker 3.0'a automated design capabilities will make the product accessible to more users at his company.

The Hartford currently uses about 100 copies of Pagemaker to publish newsletters and insurance proposals.

"We're not graphics artists, but we want to be able to produce professional-looking documents," Fontana said. "Aldus is responding to the corporate environment, where not everyone has a background in specialty graphics training."

Aldus is also betting that enhancements such as long document will keep Pagemaker's competition in check. Products like Xerox Corp.'a Ventura Publisher have been winning customers away from Aldus by featuring such extras as style sheets.

"Pagemaker still has a way to go if it'a going to truly compete against Interleaf and Ventura Publisher, but this upgrade goes a long way in addressing the competition," said Craig Cline, associate editor of "The Seybold Report on Desktop Publishing," who saw a preview of the product.

Despite Aldus'a claim to be targeting more corporate users, neither of the add-in products announced this week seem to have immediately clear connections with the corporate environment.

Freehand is aimed primarily at professional illustrators, and Aldus is still mapping out a marketing strategy for the niche-oriented Snapshot package. The latter Windows program allows a user to crop, edit and use special effects techniques on recorded video images.

Aldus claimed that such capabilities have never before been available on a microcomputer and said it plans to have a Mac version of the product shipping by next year. But that might not be appropriate for the casual desktop publishing user in a corporate setting.

"Snapshot is very impressive-looking, but I'm not sure how I would apply it to my business needs," Fontana said.

Freehand, meanwhile, received high marks from analysts such as Cline, who said it combines the best of Adobe'a Illustrator with Apple'a Macdraw.

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EDITORIAL

Fatal distraction

There's no good time for a stock market crash, but the timing of last month's blowout couldn't have been worse. It came at the height of budget planning season for MIS managers around the country and, as such, has thrown an enormous monkey wrench into what is usually a difficult process anyway.

Whether you are calculating next year's expenses for a discrete, minicomputer-driven department or mulling a $100 million five-year information systems plan, you can't help playing the "state of the economy" guessing game that has befuddled the finest analytical minds.

So amid the panic, these words to the wise: Don't panic.

That's easier said than done — or not done, as the case may be. As of this writing, U.S. stocks have shed more than $800 billion in value since reaching a peak in August. Add in the losses on stock exchanges overseas, and the total paper loss easily exceeds $1 trillion, an almost unbelievable sum.

If those losses are not recouped in substantial measure in the coming months, there is bound to be an impact, perhaps far-reaching, on world industrial economies.

But if you ask 10 renowned economists for their forecasts, you'll get at least five "good" projections, each different from the other. While no one is projecting a particularly strong year in 1988, some good minds claim the controlled growth and low inflation of the last few years will continue for the next 12 months.

Some evidence of such claims is given by the performance of major U.S. companies in the last quarter and by computer vendors in particular. Strong earnings and steady sales growth have characterized the performance of most major players across the computing spectrum, from software companies to systems makers to networking firms. Similar results have been posted by major noncomputer industrial companies like Ford Motor Co. and Du Pont & Co.

If any companies are essentially destroyed or even greatly altered by the events of Black Monday and beyond, it will be the marginal ones that had overextended themselves to begin with.

For MIS professionals struggling with next year's budget projections, the best advice might be to assume modest overall economic growth, the crash notwithstanding, while implementing certain safeguards or contingency plans in the event the economy really sours.

Continue with plans that may have been pending before the crash for any new hires but consider actually implementing the hiring process until clearer signals emerge in December and January. This should sell to senior management because of the wait-and-see element.

By all means, stick to preestablished long-term plans for the time being. The consequences of being ill-prepared for a relatively favorable economy in 1988 can be a lot worse than the market crash for your company.

Then cross your fingers.

LETTERS TO THE EDITOR

No me-too here

In "Unisys shadows IBM mid-range" [CW, Sept. 7], *Computerworld* portrayed Unisys Corp.'s announcement of the A1, A4 and A6 as a me-too response to IBM's 9370 approach.

When a vendor enhances an already unmatched combination of systems software and software tools that are code-compatible over a range of hardware that starts at 0.4 million instructions per second (MIPS) and goes to something in excess of 60 MIPS, how can you categorize this as a me-too response?

Does IBM have an operating system that covers this wide of a range of hardware? Does IBM have a fourth-generation language that is code-compatible from an entry-level system all the way up through its most powerful system? Does IBM even offer a fourth-generation language?

James B. Grinham
MIS Manager
Tremco, Inc.
Cleveland

To their credit

I have been following your coverage of relational data base management systems, and I would like to congratulate your senior editors for their excellent articles on this complex subject.

Recently, there has been much written about Ashton-Tate Corp.'s plans for Dbase IV and its future OS/2 DBMS products. It is unfortunate that there has been little information available concerning Ashton-Tate's plans. This, in turn, has led to undue speculation by industry analysts. While the specifications of Ashton-Tate's future products would be welcomed for corporate planning purposes, it is to Ashton-Tate's credit that it does not preannounce products 18 months in advance, as many other vendors tend to do.

In analyzing Ashton-Tate's statements during the past few months, it is clear that the company understands it is necessary to implement new technology and to provide a clear migration path for its large user base at the same time. To this end, Ashton-Tate has assembled a superior staff of developers who I am confident will provide users with products that will satisfy current and future requirements.

While speculation about Ashton-Tate's direction will probably continue, I hope it is in the context of a corporation that is attempting to solve complex issues in a way that best services its user's needs.

Richard Finkelstein
Vice-President
Codd and Date Consulting Group
San Jose, Calif.

Part of group

I am writing in regards to "Hardware roundup: Personal computers" [CW, Oct. 5]. The roundup included a sampling of the offerings provided by various computer vendors.

While several Kaypro Corp. computers did appear on the chart, certain configurations were not included. These configurations have been especially popular in the corporate marketplace. They include the Kaypro 286I Model C, Kaypro PC, hard-disk Kaypro PC-30 and the Kaypro 386 Models E-40 and E-130.

R. Michelle Breyer
Public Relations
Kaypro Corp.
Del Mar, Calif.

Don't be hasty

The editorial, "A taxing situation" [CW, Sept. 20], did not address the chaotic situation that the services tax has imposed on Florida businesses. Since that tax went into effect July 1, emergency rules have been promulgated and have done more than confuse everyone.

The Florida law imposed a 5% tax and provided the state's 67 local counties with a local option for more if passed by county referendum.

The law states that Professional Software Programmers, Inc. and others must tax services where the user has tax nexus within the state.

In the case of software, our company produces a package that requires minor customization for each purchaser. Consequently, we must charge 5%.

Purchasers from outside Florida must do one of two things to avoid being charged the tax. They must either fill out a request for exemption and file it with the state's Department of Revenue or sign and return to our company an affidavit stating they have no tax nexus in Florida.

The latter of the two options is, on the surface, the easiest to comply with — until you read the affidavit and learn that it must be notarized by a Florida Notary Public.

After having pressed for en-

Continued on page 22

Computerworld *welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor,* Computerworld, *P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701.*

Hurry up and wait for new applications

Software firms willing to risk big will gain big

AMY WOHL

Are you bored? Jaded? Tired of being told you should buy a new upgrade to your favorite package because it has seven new features, five of them of interest only in some other country?

Welcome to the club — 25,000 personal computer packages can be, at one and the same time, not enough and too many.

We who have already grown to love our PCs (and, in smaller numbers, our Macintoshes) have become sated with what's already out there. We have found our favorite spreadsheet, our favorite word processor, our favorite whatever. We are ready for something new.

THE USER should never know there is information he wants but have it trapped in a system or program he can't run or doesn't understand.

There are many more users waiting in the wings of computerdom, waiting for the right product to entice them into making investments of money and precious time.

The hardware is ready. The newest Intel Corp. and Motorola, Inc. processors, at last embedded in robust machines like the PS/2, the "industry standard" 80386 (OK, Compaq, I admit you have some fans) and the amazing Apple Computer, Inc. Macintosh II are prepared to do seven incredible things without even breathing hard. And OS/2, the enabling operator system, is almost here.

But most of us were not waiting for new hardware, however enticing its speed. We admire its glitter. We marvel at its power. But we wait for the software that will make it do something new and wonderful.

What, then, will this new software look like? And when will it arrive?

While some of this software will be new versions of old stuff — taking advantage of greater speed, more space and new peripherals to recast old metal in new molds — much of it will take entirely new forms.

We eagerly anticipate using the power to provide interfaces that will require virtually no training. Such interfaces would permit a new user to sit at a new computer and immediately accomplish relatively complex work. A classy 1988-style interface requires intuitive sequences, labels in ordinary English and complete contextual Help. It also requires blinding speed so the novice user will get immediate results rather than being trapped in slowly painting menus, cautions and suggestions.

All the applications the user can access should, with great consistency, use the same interface style; the user should never know there is information he wants but have it trapped in a system or program he can't run or doesn't understand. In other words, the new interfaces need to be a kind of personal agent, helping the user get the results he needs and disappearing when not required.

We suspect many of the new applications will be designed for non-numeric thinkers, uninterested in the spreadsheet metaphor, who prefer to think in words, images or concepts. Some of these applications are beginning to appear. (Think of desktop publishing joined to powerful word processors that approach the power of Hypertext without requiring the user to obtain a Ph.D. before tearing off the shrink wrap.)

The 'cute' level

Think of applications for managers, particularly senior managers, who largely think of PCs as tools for someone else. Their applications — tools to support project coordination, negotiation, management and status information (but well beyond the "cute" level such tools have barely reached in the past) — are just now peering over the horizon.

At Comdex/Fall '87 in Las Vegas this week, software thrill-seekers will see lots of new toys, but we are awaiting user reaction to two quite serious products: Lotus Development Corp.'s newly announced Agenda and Apple's recently shipped Hypercard products.

Agenda can be highly structured, uses hierarchical ideas of organization and employs a terse

Continued on page 22

Wohl is president of Wohl Associates in Bala Cynwyd, Pa., and editor of "The Wohl Report on End-User Computing" newsletter.

Managing transition conditions

How to make the most of systems transformations with the fewest problems

FREDERIC WITHINGTON

It's one thing to want to transform information systems. It's quite another to do it. The process is like tearing down the headquarters building and replacing it with a new one without disturbing any of the workers.

The transformation usually takes from three to ten years, and most of the benefits of the new systems do not become visible until near the end when the multiple data bases and user groups are on-line. However, the costs are incurred up front: Each year's budget contains no payoff development or conversion costs, and quick-fix projects with high payoffs are denied while everyone waits for the transformed systems.

The transformed systems usually bring continued higher costs. High-level protocols like Open Systems Interconnect need more compute power and memory to maintain the same response times as the more primitive ones like bisynch.

The relational data bases usually involved are less efficient than their predecessors. The entire inventory of perfectly good personal computers most usually be replaced by new ones compatible with the new software, generally at a higher unit price.

Even more objectionable are the behavioral changes end users are asked to undergo during the transition. They are asked to accept new disciplines and follow the dictates of central data administration and comply with corporate standards in the local networks they build.

They are also asked to abide by the security and integrity practices that only the central staff had to worry about before, since sensitive data is often reachable via the integrated network.

End users must also unlearn interface procedures that have become habits and replace them with new ones.

The troubles you'll see

Then there are the troubles that will occur. The transition almost always involves unfamiliar technical areas (high-level protocols, data administration, relational software, multitasking, local-area networks and so on). Personnel experienced in these areas are rare, so mistakes will be made and delays will occur. The initial, and apparently horrendous, time and budget estimates for the transition will prove low.

The result will be the progressive loss of support by initially enthusiastic end users and general managers. They do not consciously or publicly defect, they just erode away.

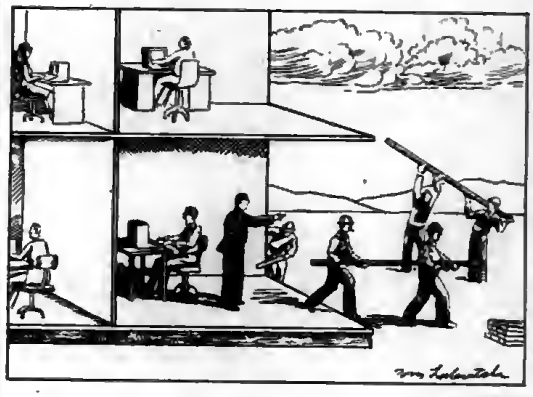
Maybe an end user obtains an emergency exception to a standard or a continuation of an old system by going over the MIS manager's head. Maybe management borrows a key technician to fight a fire. The result is the same as formal cancellation of the transition project: It peters out to nothing.

The transition manager has to be hard-nosed. He must keep the organization's eye on the long-range ball and be prepared to fight every day against the little waterings-down. This fight is necessarily going to be contentious sometimes, but you can minimize the tension. The following are ways to manage system transitions with as soft a nose as possible:

First, obtain a clear understanding and support from all or most of the managers involved, always including the chief executive officer. (If the CEO won't promise to stand by the transition during the coming bad times, forget the project).

In addition to selling the virtues of the plan, tell the managers the worst that can happen. Describe other organizations' troubles. Then summarize the transition plan in a single chart and keep showing them updated versions of it. Reviewing this chart provides early warning of delays and keeps reminding managers of their initial support.

Second, offer lots of public relations and proactive education for end users. As new functions begin to appear, provide lots of hand-holding and consulting. These provisions should be made well ahead of system availability, even though your people don't know all the answers yet. It is better to appear clumsy than arrogant.



TOM LULEVITCH

Third, provide what benefits you can along the way. Often electronic mail, desktop publishing and local interactive applications can be offered relatively early in the transition. Publicize these benefits internally, along with whatever qualitative improvements in operational efficiency can be demonstrated.

Fourth, insist on the schedule. Doing so will mean refusing to provide short-term solutions to user problems or maintaining old systems. It will mean withdrawing support for old software (for example, old data base management systems or time-sharing packages). Insist on your own people learning new techniques and moving to new jobs — some of the most stubborn opposition to system transitions comes from within the systems organization.

Losing battles

There will be fights, and you may have to lose some. Some of the end users may turn to outside services in a huff. However, if you follow the first three rules, the loss rate should be acceptable. And when your new system is ready, the end users who went outside will come back fast.

Transition managers are not paid to be nice guys, though diplomacy is necessary. They are, however, rewarded for their success.

If you want to earn membership in the general management group, there is no better way than by demonstrating the firmness needed to complete a major system transition.

A 30-year veteran of the computer industry, Withington was a vice-president at Arthur D. Little, Inc. and is now an independent consultant. He has written four books and more than 60 articles and papers.

Hurry up

CONTINUED FROM PAGE 21

menu interface not unlike 1-2-3. Hypercard is much more visual and organized by types of information.

These products are not the same, yet they share an ability to address the need to take notes of ideas, concepts and actions and find these notes — a day or a year later — without any predetermined ideas of how they will be needed in the future.

Both products will appeal to new kinds of users, and both require substantial power. Although they run on the best of the last generation's PCs, they are really designed with an eye to the future. The kinds of giant, living personal data bases they envision will quickly need the power and size of 80386s and 68020s.

An interesting issue is where will the innovative products come from? Will they follow our development belief (which is almost a religion) that really new products come from new companies?

Or are these products so high-powered that they require a combination of the resources and organization of the big, successful companies that have the freedom to explore new ideas? Perhaps Agenda will prove, once and for all, that a single company can have more than one top-of-the-market software product.

One wonders how long the new software markets will wait to get organized. Are these new products like the spreadsheet market, in which a single early product permanently monopolizes the marketplace? Or are they more like the word processing market, an arena divided among at least five major players with the continuing ability to produce newer, better products (and better-managed companies) to knock out or push aside the former highfliers?

Scoffers no more

With a playing field of perhaps 15 million users now in place and a potential workstation market at least three to four times that size in the future, the tantalizing question remains: What will be the Lotus 1-2-3 of the new generation of PCs? Where is the application that will turn millions of current scoffers into devoted, competent users?

My bet is that such applications will start to appear soon. A few established companies have a chance at it, but a well-funded start-up with a brilliant idea (or, remembering 1-2-3 and Ventura, a newly brilliant implementation of an existing idea) seems to have the best chance.

The "Aha!" in the night cannot be institutionalized, and the newcomer with the most to gain — and the least to lose — will take the big risks that lead to big breakthroughs.

Continued from page 20

actment of the law, Florida's governor, Bob Martinez, has reversed himself within a six-week period. He is now asking for repeal and is in contention with the legislature, where a battle is taking place to fix, not repeal, the tax.

Taxes should be imposed, if at all, after deep consideration and careful analysis of the consequences.

George A. Bjorkman
President
Professional Software Programmers, Inc.
Palm Beach Gardens, Fla.

Deserves support

I agree with Anthony Reed [CW, Sept. 7] that building good writing skills requires management support. Support can take the form of coaching or training.

Imagine how technically and creatively advanced organizations would be if professionals could share their knowledge as expertly as they use the knowledge themselves. Better writing is one way people learn to do so.

Asking an untrained subordinate to write a summary invites serious misunderstandings. To abstract, extract, digest, synopsize or condense only seems easy when done exceedingly well. Those who write "anything made easy" books are remarkably well-informed people with prodigious language skills. It is their knowledge and skills that make them such good communicators. That level of writing is needed from an organization's technical experts.

Rosalind Gold
President
Gold Consulting
New York

This week in history

Oct. 31, 1977
In its biggest announcement in history, Univac System brings out five systems at the high ends of its product lines — two in its byte-oriented 90/80 family and three extending its word-based 1100 series. All five processors are described as alternatives to IBM's large 370s and newer 30 series as well as natural growth paths for installations already using Univac gear.

Nov. 1, 1982
In a triple-pronged attack on the office automation market, Sperry Univac Mini-Computer Operations introduces its Sperrylink Office System that can function in three modes: interdepartmental, departmental and stand-alone.

STOP BUILDING CLONES.

It seems like everybody out there is doing the same old thing.

But our new PC/AT-compatible chip set lets you do something entirely different.

Like building PC/AT-compatible computers and enhanced PC/AT products with every feature and function you can think of.

Thanks to our megacells and ASIC design tools, you can customize your PC faster than your competition can say Big Blue.

Or you can save big money buying our chip set right off the shelf.

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Our CMOS, five-chip set cuts the number of non-memory ICs on a motherboard from 110 all the way down to 16. That's one of the lowest chip counts on the market.

You save 85% of the parts. And you probably save more money than with any other PC/AT-compatible chip set.

But what about speed?

How does 12 Mhz with zero wait states read and one wait state write sound to you? And even at top speed, a full motherboard uses less than 1.6 amps.

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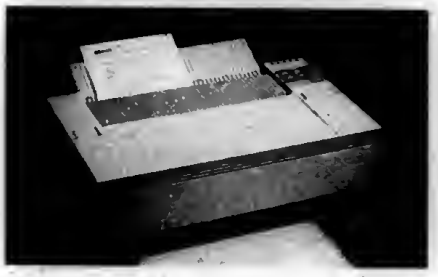
Our pace doesn't slack off when changing paper types either. Just one push of a button takes you from tractor feed to cut sheet—instantly. All while producing crisp, clean letter quality printing. For everything from spreadsheets to memos to multi-part forms.

The RuggedWriter 480 printer performs equally well for one person or five. On either a personal computer or small business system.

So take an inside tip and put your money on the industry frontrunner, the HP RuggedWriter 480 printer. Call your local HP sales office or dial 1-800-752-0900, ext. 905A and ask for the RuggedWriter Fast Pack. It's a sure bet.



HEWLETT PACKARD

SOME THINGS YOU CAN'T EVALUATE FROM A LIST OF INGREDIENTS.

A DBMS IS ONE OF THEM.

When you think about it, relational DBMS products have a lot in common. They're all built around SQL. Most include 4GL tools. They all have a list of features and functions you can check off one at a time. And they all claim high performance.

But once you really get to know relational DBMS products, the differences between them become as clear as the differences between a great wine and a lesser vintage. It's the care in blending quality ingredients that produces a really great product.

And that's why INGRES is now establishing itself as today's DBMS standard.

INGRES runs on everything from mainframes to minis to workstations and PCs. And our new INGRES/STAR, the first distributed DBMS, lets users work with data from all your corporate databases and systems. Anywhere in the world. As a result, just like any vintage product, we're recognized by leading experts in the field. INGRES has been voted "Best DBMS/4GL" by *Digital Review* for two years running.

We have also delivered such a consistently high level of customer satisfaction that 99% of our customers stay with us, year after year.

Here's what it all comes down to: You can't tell a great wine from an ordinary one just by reading the label. And you can't really get to know a DBMS just from a data sheet. That's why we'd like you to experience INGRES first-hand.

Just send in this coupon, or call us. And get a taste of what a superior relational DBMS can do.

Yes, I'd like a taste of INGRES. Please: 101

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SOFT TALK

Charles Babcock

Decoding IBM's Unix

How committed is IBM to Unix? The question comes up any time there are two or more people in a group discussing Unix.

At the first Unix Expo in New York in 1985, I remember hearing a member of the audience respond to a panelist's statement that IBM was finally supporting Unix.

"IBM supports Unix the way a rope supports a hanging man," he said.

Some people think IBM's Unix workstation, the RT Personal Computer with its Advanced Interactive Executive Unix, is a rope that few users care to get near.

But there's also Xenix on the IBM PC, and that has proven a little more popular. IBM offers IX/370 for its 370 family of mainframes, along with PC/IX and Series/1 IX. How much these three have in common, beyond the IX suffix, is hard to say. IBM has never been caught saying they are compatible.

Four flavors of Unix is enough for most vendors, but IBM has a fifth, ACIS from its academic systems group, for a

Continued on page 29

VM/SP update eases migration

IBM demonstrates commitment to VM with bimodal interfaces

BY CHARLES BABCOCK
CW STAFF

RYE BROOK, N.Y. — IBM is slated to offer the ability to write applications that will work with either VM/SP or VM/XA, according to its announcement of VM/SP Release 6 late last month.

Known as bimodal programming, the capability will be provided by two interfaces that will allow a programmer to write one CMS application that can run under VM/XA or VM/SP, according to IBM. The interfaces were first offered in June with the announcement of VM/XA. They are slated to be available in December 1988 with Release 6 of VM/SP.

Bimodal programming should aid IBM's VM customers in quickly migrating their new applications to the larger memory and addressing capabilities of VM/XA. "It's clearly a bridge to get users from VM/SP to VM/XA," said Gabe Goldberg, director of technology at VM Systems Group, Inc. in Arlington, Va.

Position shifts

The inclusion of bimodal interfaces indicates IBM has changed its view of VM as a temporary stop on the way to MVS/XA for its many VSE users to more of a long-range operating system in its own right. "IBM is trying to push VM more as a primary operating system," said Tony Percy, vice-president of product planning at Applied Data Research, Inc., a Princeton, N.J., mainframe software house.

"IBM is telling users VM is shaping up as a mid-range operating system of choice," agreed Robert P. Tasker, chief computer analyst at The Yankee Group in Boston.

Bimodal programming was included in the Oct. 20 announcement of new features in VM/SP, which included CMS file sharing and a Callable Services Library of operating system functions [CW, Oct. 26].

Percy said be viewed CICS/VM, also included in that announcement, as a product to be used in conjunction with CICS on a mainframe, which would continue to manage the volume transaction processing. Spokesmen for The Yankee Group said CICS/VM will be limited to 50 to 60 transaction/min because the

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Integrated tools mark CASE expo

BY CHARLES BABCOCK
CW STAFF

ARLINGTON, Va. — The CASE Expo here Oct. 19-21 offered a flock of new computer-aided software engineering (CASE) tools, including a rules-based system from Palo Alto, Calif., start-up Reasoning Systems, Inc. and a set of integrated tools from Promod, Inc.

Reasoning Systems announced the second version of its rules-based system, Refine. The $28,500 version of Refine now runs on Digital Equipment Corp. VAX minicomputers, including the Vaxstation, as well as Sun Microsystems, Inc. Sun-3/160 and Sun-3/260 workstations and Symbolics, Inc. 3600 LISP processors. On the Vaxstation, Refine runs under DEC's Common LISP.

The backbone of Refine is a high-level language to represent the specifications of the system. With the language, specifications can be compiled into executable

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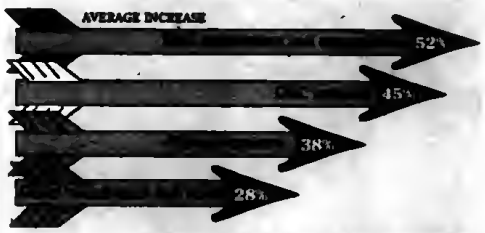
Data View

Targeted marketing

Survey of software vendors reveals that contract values for IBM mainframes and DEC systems have increased in price from 1984 to 1987 more than contracts for other systems



INFORMATION PROVIDED BY CULPEPPER AND ASSOCIATES, INC.

Fortran-77 converter out

BY SUZANNE WEIXEL
CW STAFF

PHOENIX — A Fortran preprocessor that reportedly converts Digital Equipment Corp. VAX/VMS-specific Fortran into ANSI-standard Fortran-77 was recently introduced by Computer Translations.

According to a company spokesman, VM77 allows programs to be ported from VAX to

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Inside

- CASE tools not "silver bullets," conference-goers told. Page 28.
- Alliant beefs up software offerings. Page 29.
- Kodak develops financial software package. Page 34.

INFORMIX UPDATE: A QUICK REPORT ON DB2.

Quick.
What's the fastest way to write a report from a DB2™ database?

Use a fourth generation report writer.

Presenting Report/DB2™ from Informix®

It's a fourth-generation report writer and a perfect complement to QMF.™ It lets DB2 users and developers use a blend of non-procedural and procedural syntax to design and build complex reports quickly and easily.

For instance, instead of writing dozens of lines of COBOL, you can use simple non-procedural statements to generate page headings, footings, control breaks and the like.

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SQL and MVS, but no TSO.

Report/DB2 uses exactly the same SQL as DB2 to access data. So it's a breeze to learn. It runs as a batch program in MVS environment and doesn't require TSO. Which, more, it's built on an IBM® supplied interface. Which means it'll be compatible with all future releases of DB2.

Write on a PC, run on a mainframe.

Report/DB2 is based on the report writer in Informix-SQL, our own best-selling RDBMS for UNIX™ MS™ DOS and VMS™. So instead of tying up your mainframe, you can use Informix-SQL and a PC to develop Report/DB2 reports. And then move them over to the mainframe.

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Report/DB2 is just the first in our family of fourth generation application development tools and utilities for DB2.

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Digital has it now.

Eaton Corporation, a $3.8 billion company in automotive, trucking controls and electronics, has recently developed an automated mechanical Twin Splitter truck transmission. A boon to driving in mountains, it's currently being road-tested in Europe. Fred Oakland, technology director, technical computing, talks about its initial development. "Digital's technology lets our division and corporate engineers respond to market by integrating all the resources of our computer network – up-front design on a workstation, simulation on a huge mainframe and prototype fabrication on another system. Having Digital's computers do mechanical analysis

"At Eaton, Digital's networking capabilities have chopped our time to market dramatically."

to ensure manufacturability eliminates a complete prototyping cycle and cuts our time to market by a significant amount." Of course all this capability must be affordable: "Digital's cost-effectiveness comes from their ability to interconnect diverse devices; the ease of use; the small investment necessary to get started or expand; and to maintain it, there's essentially no effort." Oakland adds: "Time and again, Digital's networking capability gives us an edge over the competition."

To get your competitive advantage now, write to: Digital Equipment Corporation, 200 Baker Ave., West Concord, MA 01742. Or call your local sales office.

digital™

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SOFTWARE NOTES

CASE tools not 'silver bullets'

Computer-aided software engineering (CASE) tools are not "silver bullets" that remove programmer productivity problems in a single shot, **Pansophic Systems, Inc.** users were told at the Telon conference in Dallas last month. "CASE cannot simply be loaded into the information systems machine and fired at whatever business problems come along," said Vaughn Merlyn, president of Merlyn Consulting, Inc. in Marietta, Ga. "The migration path to a 'next-generation' system is filled with obstacles," Paul Hessinger, vice-president of research for Computer Task Group, Inc. in Buffalo, N.Y., also told the group. Among these obstacles are skeptical executives, poorly defined automation requirements and systems personnel who are threatened by the process of automation itself.

Digital Equipment Corp. has signed an agreement with **CMQ Communications, Inc.** in Toronto to develop software to support CMQ's financial market data system on the VAX. The software would allow CMQ's real-time consolidated ticker feed to be received and distributed by DEC VAXs. The ticker feed collects information from all the major North American stock exchanges.

Computer Systems Resources, Inc. in Atlanta has developed a law office automation package with a telephone time and billing feature as part of **AT&T's** cooperative marketing program. The package runs under Unix and requires the Informix Software, Inc. relational data base management system.

IBM spokesmen say manuals are now available for programming in conjunction with Systems Application Architecture. There are manuals for Cobol, Fortran, C, Application Generator and data base reference. A design guide advises developers on how to write programs that are portable across IBM's hardware.

Boole and Babbage, Inc. in Sunnyvale, Calif., has sold its XPF products to **Pansophic Systems, Inc.** in Oak Brook, Ill., for $4.5 million. The products are XPF/Cobol and XPF/Cobol CICS, which are interactive, on-line test and debug facilities for IBM mainframes.

Westinghouse Electric Corp. will market Itex.25, developed by **Videodial, Inc.** in New York, a software package that allows IBM mainframes to communicate with ASCII hosts via CCITT X.25 networks. Westinghouse spokesmen said the product opens up external ASCII data bases to users of IBM 3270 terminals.

Vmark Software in Natick, Mass., formerly Vmark Computer Systems, has changed its name to emphasize its success in the Pick Systems' Pick operating system software field. Vmark recently concluded a second round, $1.7 million financing with Hambrecht & Quist, Inc. and other investors, according to *News & Review*, the newspaper for Pick users.

The **Dylakor Division** of Sterling Software in Chatsworth, Calif., says its line of mainframe products, including Dyl-260, Dyl-Inquiry and Dyl-Interface, are available to run on the IBM 9370.

Interleaf, Inc. in Cambridge, Mass., and **Cadre Technologies, Inc.** in Providence, R.I., have integrated their computer-aided software engineering documentation and design tools into the Sun Microsystems, Inc. Network Software Environment.

Press releases frequently come across the Software desk with an occasional word misspelled or punctuation missing, but now and then, one seems to go out of its way to fracture the King's English, to wit: "Every once and a while a product comes along that really deserves recognition. Univax-Linker is such a product, but then again I am a little bias," says the president of a Mississauga, Ontario, company.

HP minis get cost system

GLENDALE, Calif. — MCBA, Inc. last month released a manufacturing package for the Hewlett-Packard Co. line of minicomputers.

The Job Costing module is intended as the first in an 18-module manufacturing system that will be offered for the HP Series 3000. A version for HP Spectrum hardware is scheduled for next year, MCBA said. The current release was written to work with the HP Image data base management system.

The Job Costing package was designed to keep track of costs associated with the manufacturing process as well as perform "what-if" scenarios.

It is said to allow users to identify problem areas by indicating where costs are higher than planned. It provides status reports on jobs in progress. It also creates general ledger entries for costs like direct labor and materials.

Currently available, the module ranges in price from $5,000 to $7,500, depending on the hardware configuration.

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Alliant adds compiler tools

BY STANLEY GIBSON
CW STAFF

LITTLETON, Mass. — Seeking to stimulate demand for its family of parallel processors, Alliant Computer Systems Corp. announced enhanced compiler and algorithm products last week.

The software was unveiled at the same time that Alliant introduced a minisupercomputer, the FX/4, that fills a price/performance gap between its FX/1 and FX/8 parallel processors.

The FX/Skyline Solver is a package for solving linear algebraic equations that are commonly found in finite element analysis and fluid dynamics applications. Alliant said it will license the package at no cost to developers. It will also make the package a part of its software library, which is available to users who pay a fee. The package is set to be available in a month.

In addition, Alliant said some features of FX/Skyline Solver have been incorporated in a version of Swanson Analysis Systems, Inc.'s Ansys package that will be available later this year.

Alliant also released the FX/C compiler, which the vendor said can double the performance of C programs on its machines. In addition, Alliant announced the FX/Linpack and FX/Eipack scientific libraries, which it claimed can boost performance five times, and in some cases up to 30 times, above that of existing mathematical subroutines.

The FX/C compiler license costs $15,500 for the FX/4 and FX/8 systems; it costs $4,500 for the FX/1. FX/Linpack and FX/Eispack cost $2,000 each. Those packages are available immediately.

In introducing the products, Alliant President and founder Ronald Gruner also said Alliant will be offering off-the-shelf applications in increasing numbers. Currently, 60% of Alliant's customers write their own applications, he said.

Gruner said Alliant has doubled its software library to 100 packages in the last six months by hiring experts in several fields.

Decoding

CONTINUED FROM PAGE 25

version of the RT PC sold to universities. So if activity is any measure, IBM is now committed to Unix.

Nevertheless, doubts persist that IBM is willing to put its marketing muscle behind an operating system originally from AT&T — Unix — and then support it. When AT&T announced it was getting into the computer business, it tried to launch its version of Unix as an alternative to the IBM-dominated mainframe operating systems, citing Unix's multiuser, multitasking capabilities.

Its communications features, flexible development capabilities with pipeline utilities and multitasking capabilities all recommended Unix, but so far, the marketplace has decided that Unix is best suited to workstations.

But, as a recent report on on-line transaction processing (OLTP) from The Yankee Group pointed out, Unix couldn't be all those things and also be a good transaction processor — something it was going to have to do to compete with the mainframe systems.

"The on-line transaction processing market is littered with the corporate corpses of well-intentioned efforts that had Unix as the core operating system. Auragen, Synapse and Enmasse are gone. Tolerant and Sequoia were wounded, perhaps mortally, by jousting with the windmill of Unix," the report said.

Unix's major deficiencies, according to The Yankee Group, are as follows:

- It has no concept of a transactional unit.
- Its time-sharing scheduler can handle multiple tasks from terminal users, but it can also interrupt a transaction before it is completed, thus slowing throughput.
- Its file structure requires an OLTP system to provide "a complete development of indexed file structures [and] transaction and data base integrity," which can only be achieved by overriding Unix's time-sharing file orientation.
- Poor security.
- No support for terminal or other devices beyond teletypewriters.
- No screen forms support.

So where does that leave IBM's commitment to Unix?

The October issue of "The Unix Perspective," from International Data Corp. in Framingham, Mass., outlines it this way: IBM has a three-tiered approach to Unix, with AIX "as it currently exists for the RT as the core offering." AIX versions that are "rich subsets of the RT AIX" will run on the Personal System/2 Model 80 and IBM 370 processors. They cannot be exact subsets because parts of AIX were written specifically for the RT PC's reduced instruction set computing architecture and are not compatible with other processors.

IBM intends to develop a version of AIX for the PS/2 Model 80 that supports Microsoft Corp.'s MS-DOS applications as a task. At the mainframe level, IX/370 will eventually become a closely related AIX/370. And AIX will continue to be offered on the mid-range RT PC. "The offerings will be nearly 100% compatible, according to IBM, with the differences being primarily hardware-specific features," "The Unix Perspective" said.

Babcock is *Computerworld's* senior editor, software & services.

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CASE expo

FROM PAGE 25

code, which enables rapid prototyping and validation, said John J. Anton, president of Reasoning Systems.

"The specification compiler has the expertise of a programmer" captured in a set of rules, he said. The specification language can provide high-level declarative expressions and low-level procedure statements. It can deal with object data types with specialization and inheritance and standard procedural, If, While and Let constructs, he said.

Programmers experienced in artificial intelligence languages are able to use Refine with little training, Anton said, and code can be generated from the specifications for the finished system.

The Knowledge Base Browser is part of the system and allows a developer to look through the knowledge base, viewing objects in a variety of forms, according to Anton.

Catching errors at the specification level is cheaper and more efficient than dealing with them after they are discovered in a coded system, Anton said. Reasoning Systems plans to offer a version of Refine for the Sun workstations by the end of the year, he added.

Promod, Inc. in Lake Forest, Calif., introduced a family of integrated tools to cover the steps of the development process called Procap, Re/Source and Pro/Source, Promod President Peter Craig said.

Procap is an interactive system for automated detailed design, source-code development and maintenance and documentation. Program code entry is automated with a syntax-directed editor, code templates and immediate syntax analysis.

Just browsing, thanks

Procap can also be used on existing source code as the first step in reverse-engineering a modified system. A programmer using the interactive facility can browse through existing programs to locate key constructs and insert design information, Craig said.

Re/Source offers a bridge into the Promod structured environment. It contains a design library that can be used to feed program elements into Promod's modular design methodology.

The Pro/Source code generator is able to use designs to generate source code. It can reportedly produce Ada, C or Pascal and maintains the original design data in a data base.

Procap, including Re/Source and Pro/Source, is priced at $5,000 on an IBM Personal Computer XT, AT or compatible and $10,000 to $40,000 on the VAX. The firm also offers a Promod family of design and requirements tools that have been available since 1984 and are in use at 300 sites. They are priced at $10,000 for a set on the PC and $20,000 to $80,000 on the VAX.

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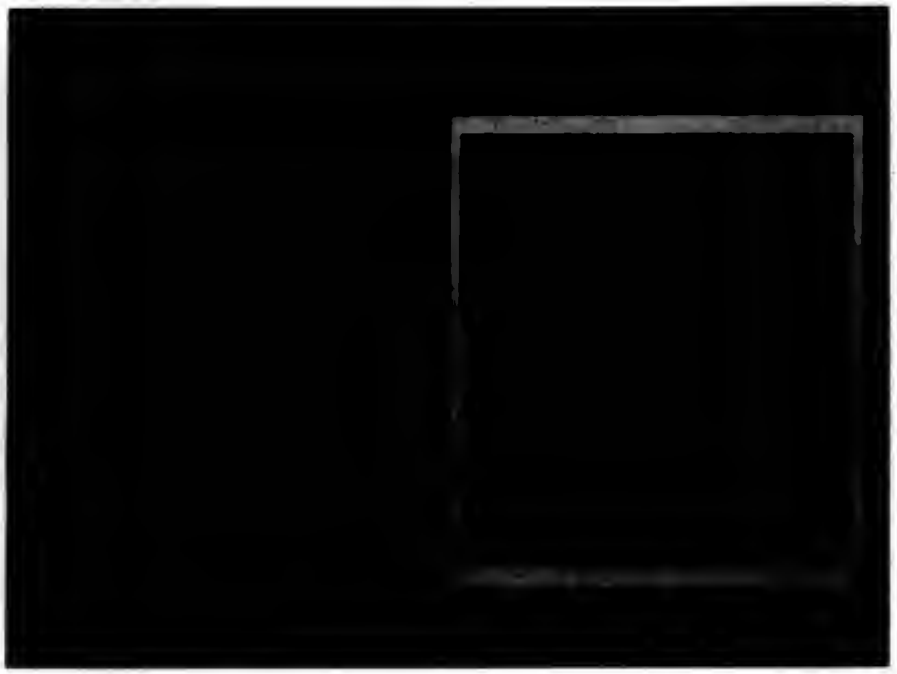

Good news for DB2 users: beginning this January, NATURAL 2, Software AG's fourth generation application development technology, will support DB2 and SQL-DS data bases.

The availability of NATURAL 2/DB2 and NATURAL 2/SQL-DS means that you'll be able to use DB2 or SQL-DS data to develop truly portable applications, with functionality far beyond anything you could have built using COBOL.

And the same commands within your NATURAL 2 application can also process data from Software AG's data base management system, ADABAS, as well as from VSAM, DL/1, and IMS/DB.

Which is good news for just about everybody. So take a look at the Next Dimension in fourth generation technology. NATURAL 2.

NATURAL 2 provides the friendly look and feel of PC screens for mainframe applications, with functionality unmatched by other fourth generation languages. Better yet, NATURAL 2 solutions are available to DB2 and SQL-DS users. For more information about NATURAL 2 and other Software AG business solutions, call toll-free: 1-800-843-9534.*

* In Virginia or Canada, call (703) 860-5050.

SOFTWARE AG
PROGRAMMING BUSINESS SUCCESS

Fortran-77

FROM PAGE 25

non-VAX systems. Once converted, the program can be compiled on any computer system that supports the Fortran-77 standard.

"We envision VM77 as the first step in a porting environment," said Joe Chisolm, a principal of the company. "It should save users anywhere from three weeks to a couple of months of man-time, depending on the type of program and the host system."

In addition to conversion of VAX/VMS extensions, VM77 includes a feature called Codeclean that reforms, renumbers and indents the source code, making the Fortran program more readable and easier to maintain, the vendor said.

According to Chisolm, VM77 was designed for a situation in which there are both VAX/VMS systems and other host systems in use. It gives DEC Fortran users the freedom to move to other computer systems without having to reprogram, he said.

VM77 is available on Pyramid systems as well as on Prime Computer, Inc. Primos-based systems. A system license for an unlimited number of users costs $3,500.

VM/SP

FROM PAGE 25

product "runs in a virtual machine under CMS," Tasker said.

While CICS/VM will allow CICS applications to run on a distributed processor, such as the IBM 9370, under VM/IS, it is what Tasker called "a kludgey solution."

CICS/VM is scheduled to be available in a production release in the first quarter of 1989, with a "planning and pilot" Release 1 due out in May 1988.

According to the IBM announcement, CICS/VM will include a subset of the command-level Application Programming Interface (API) of CICS under MVS, which will provide the capability "to port applications from the host to the distributed system, and vice versa" at the source-code level.

Supporting SQL/DS

API will provide support for use of SQL/DS, the relational data base management system under VM; File Control; temporary storage; and Basic Mapping Support.

IBM's announcement also stated that a CICS transaction that contained program errors executing in a CMS virtual machine would not cause other virtual machines to fail. It also would not impact the CICS/VM file servers.

IBM recommended in the announcement that customers ordering CICS/VM also get VM/IS 5.1, its 9370 version of the operating system due out in May 1988.

In addition, IBM offered an Office Series Solutionpac, or preconfigured office system, for VM users. It included support for the IBM Personal Typing System, IBM Token-Ring local-area network attachment of IBM Personal Computers and Personal System/2s as workstations and the composite document capabilities of the company's Displaywrite/370 Release 2.

> "IBM IS TRYING to push VM more as a primary operating system."
>
> TONY PERCY
> APPLIED DATA RESEARCH, INC.

IBM said the Office Series Solutionpac will be available in June 1988 for a one-time charge of $39,695 to $111,510 for an entry-level system.

IBM also announced a System/36 Office Series Solutionpac, which provides additional workstation attachment options for the PS/2 Models 50, 60 and 80.

The System/36 Office Series Solutionpac is available immediately at a one-time charge of $6,810 to $13,610 for an entry-level system.

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NEW PRODUCTS

Systems software

A financial software package designed for accessing images of checks and similar documents with Kodak IMT-350 and IMT-250 microimage terminals has been announced by **Eastman Kodak Co.**

The **Kodak KAR** item-retrieval manager system uses an IBM Personal Computer to batch print requests entered at the keyboard or received from a host system. The microfilm addresses of the requested images and print instructions are distributed to up to 16 IMT-350 or IMT-250 microimage terminals for automated look-up and printout.

The software is available alone, with an IBM PC or with IMT terminals. A complete system is available for about $25,000.

Eastman Kodak, 343 State St., Rochester, N.Y. 14650. 716-724-1336.

Version 7.0 of the **Fieldwatch** service management information software system has been released by **The Data Group Corp.**

Version 7.0, available for Digital Equipment Corp. VAX computers, features two additional modules — RCM-Plus, a repair center management module that tracks and controls repair depot operations functions, and Scheduling-Plus, designed to schedule corrective and preventive maintenance, equipment installation and deinstallation, engineering changes, equipment moves and other planned activities.

Fieldwatch also includes modules for dispatching, on-line inventory control, billing and technical support management.

Fieldwatch is priced from $45,000 to $210,000.

The Data Group, Burlington Business Center Two, 77 S. Bedford St., Burlington, Mass. 01803. 617-272-4100.

DT/IDL, a Digital Equipment Corp. Microvax II-based image-processing software package, has been announced by **Data Translation, Inc.**

The software is said to provide access to 250 frame-grabbing, image-analysis, filtering and plotting functions for image-processing applications. It features an interactive data language with English-language commands and syntax. Users can acquire images from a video source or from computed-axial-tomography scanners and scanning electron microscopes. Once captured, images can be processed using combinations of DT/IDL commands.

DT/IDL costs $3,750.

Data Translation, 100 Locke Drive, Marlboro, Mass. 01752. 617-481-3700.

Applications packages

United States Data Corp. has unveiled two programs for its Factorylink real-time, multitasking application system.

The **Compiled Math and Logic Program** is used to perform mathematical calculations, make logical comparisons and perform a range of functions on data contained in the Factorylink real-time data base.

The Factorylink **Recipe Program** is used to transfer sets of predefined values, or recipes, from disk files into selected Factorylink real-time data base elements for batch process automation applications. It can also be used to save values from the data base to disk files.

The Compiled Math and Logic Program costs $695 for the development version and $450 for the runtime version. The Recipe Program costs $395 for the development version and $250 for the runtime version.

United States Data, P.O. Box 850058, 1551 Glenville Drive, Richardson, Texas. 75085. 214-680-9700.

A software application package said to aid in receivables collection has been announced by **Donald J. Simons Associates, Inc.**

The package, called **Receivables Collection Aid/3X**, runs on IBM System/36 or 34 minicomputers. It is said to allow users to view all previous collection transactions with the debtor while on the telephone and enter new notes directly into the computer from a set of standard or free-form comments. Users can also enter or change data. Up to 48 lines of data can be stored for each customer and a daily report is printed of accounts flagged for follow-up.

The Receivables Collection Aid/3X costs $395, including source code.

Donald J. Simons, 47 Laurel Hill Road, Crugers, N.Y. 10520. 914-739-6041.

An enhanced version of the **Accounts Receivable** software package for Wang Laboratories, Inc. VS computers has been announced by **Sotas, Inc.**

The Accounts Receivable system features real-time processing; on-line cash application; inquiry into records through various paths; on-line data entry with editing; multicompany capabilities with independent processing options; automatic determination of discount criteria; flexible aging; selective statement, letter and management report generation; credit management data; maintenance of customer history; and automatic interface to the Sotas General Ledger system.

The Accounts Receivable system costs from $7,000 to $22,000.

Sotas, 192 Merrimack St., Haverhill, Mass. 01830. 617-372-0770.

Languages

Digitalk, Inc. has announced **Release 2.0** of **Smalltalk/V**, its personal computer-based implementation of the Smalltalk programming language.

Release 2.0 features support for the 640- by 480-pixel graphic modes of the IBM Personal System/2 Models 25 and 30 and also includes windowing enhancements. Users may open different windows of any size and function, according to the vendor.

Other features include object-oriented programming, bit and form editors for the creation of fonts and icons and an object-swapping virtual-memory scheme.

Smalltalk/V Release 2.0 costs $99.95. Registered owners may upgrade for $25.

Digitalk, 9841 Airport Blvd., Los Angeles, Calif. 90045. 213-645-1082.

Development systems

Meta Systems, Ltd. has announced **PSL/PSA Version 6.0**, an update of its computer-aided software engineering product called Problem Statement Language/Problem Statement Analyzer.

PSL/PSA is said to automate the analysis and design of information systems. PSL is a language for describing aspects of a system at any phase of the software development life cycle.

PSA is an analyzer that stores these descriptions in a data base, performs completeness and consistency checks and generates reports and documentation sets.

Version 6.0 features expanded modeling capabilities, on-line documentation, a macro capability, language additions and expanded document-generation capabilities.

PSL/PSA is priced from $18,000 on a workstation to $45,000 on a mainframe.

Meta Systems, Suite 200, 315 E. Eisenhower Pkwy., Ann Arbor, Mich. 48108. 313-663-6027.

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Douglas Barney

Waiting is hardest part

We're waiting. With all the excitement over new applications software and operating systems announcements, it'a easy to overlook the fact that precious little of this stuff is currently shipping. As for the most vaporous of wares, we are not so much waiting for the products as still waiting for scheduled ship dates and more detailed product specifications.

For three well-known companies, this information has been promised for this quarter. Check your press conference listings for ship dates for IBM's OS/2 Extended Edition (if rumors are correct, IBM should be spilling those beans this week), a ship date for IBM and Microsoft's OS/2 Presentation Manager and information about Lotus's upcoming data base product and an IBM 370 version of 1-2-3.

We were waiting. We are no longer waiting for AST's Intel 80286-based coprocessor board for Apple's Macintosh II. With this board, Mac II users can run existing Microsoft MS-DOS applications as well as the

Continued on page 45

Language battle rages at C

Microsoft, Borland lock horns with compilers targeted at low end

BY STEPHEN JONES
CW STAFF

The ongoing battle between Borland International and Microsoft Corp. in the microcomputer languages market is expected to heat up this week as both companies release new C compilers aimed at the same low-end marketplace.

Microsoft is betting that its Quick C can unseat Borland's Turbo C as the leading compiler among low-end C programmers. Borland, meanwhile, hopes to build on an installed base of 150,000 Turbo C users with its upgrade.

The products offer several similar features, including a graphics library, on-line Help capabilities and an identical $99.95 price. The ensuing competition is expected to be fierce. "It's going to be a real slugfest," said Bruce Johnston, an analyst with First Boston Corp. in New York.

Analysts said Borland's upgrade was designed to address a number of discrepancies in the original Turbo C release, which Microsoft has been criticizing in a recent advertising campaign.

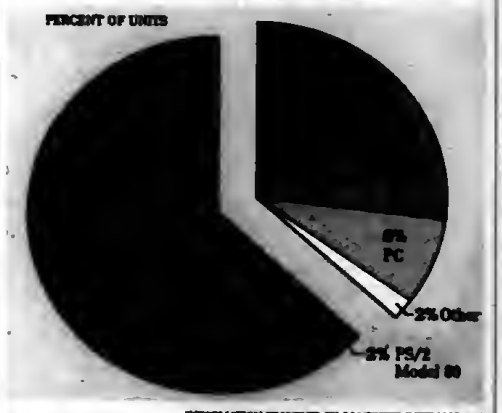
One of the most notable additions is the graphics library, which is based on the same source code that produces the sharp graphics for Borland's Quattro spreadsheet. Borland said the graphics capabilities are also bundled with Turbo Pascal 4.0, which is scheduled to start shipping this week.

Brad Silverberg, Borland's vice-president of engineering, said the library makes it easy for programmers to produce graphics such as pie charts because of the program's high-level con-

Continued on page 44

Data View

IBM personal computers
Models picked by Fortune 1,000 planners



INFORMATION PROVIDED BY COMPUTER INTELLIGENCE

Board links PCs to Apple

BY ALAN J. RYAN
CW STAFF

BERKELEY, Calif. — Hercules Computer Technology, Inc. and TOPS recently said they will release a personal computer add-in board by January that will combine graphics with an Apple Computer, Inc. Appletalk network port.

The Hercules Network Card Plus will provide users with a network link to other PCs, Apple Macintoshes and Unix-based systems, according to James Harris, president of Hercules.

TOPS is a Sun Microsystems, Inc. company.

The card will cost between

Continued on page 44

IBM spices desktop offerings

BY ED SCANNELL
CW STAFF

RYE BROOK, N.Y. — IBM attempted to establish itself as a major player in the desktop publishing arena recently by announcing a series of products that allows users to create newsletters and presentations on Personal System/2 Models 50, 60 and 80.

The Solutionpac Personal Publishing Option/A permits systems ranging from the PS/2 Model 30 to 80 to act either as a stand-alone system or as part of a local-area network.

The company also announced updated versions of its Bookmaster and Browsemaster desktop publishing products that now work with its MVS operating system.

Users of the enhanced version of Bookmaster MVS can create technical documents, produce multiple documents from a

Continued on page 44

Inside

- Tecmar founder Alpert speaks out on new firm, PS/2 aftermarket. Page 37.
- Grid Systems claims to have first commercially available CMOS laptops. Page 40.
- AST uncovers VGA graphics board. Page 41.

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35 Dir., Mgr., Suprv., OA/WP
38 Data Comm., Network/Systems Mgt

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12 Vice-President, Asst. VP
13 Treasurer, Controller, Financial Officer
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SMALL TALK

William Zachmann

Windows busting out

Forget about artificial intelligence and expert systems software. Forget about computer-aided software engineering packages. Forget about all the new spreadsheets poised to make Lotus's 1-2-3 the Micropro Wordstar of 1988. Forget about all the great new desktop publishing tools. Forget, even, about OS/2.

The real blockbuster software product of 1987 is not found among these.

Instead, Windows 386, the newest and most powerful incarnation of Microsoft Corp.'s implementation of an Apple Macintosh-like graphical windowing interface is, by far, the most important piece of software to hit the street this year.

The graphical user interface of Windows 386 is fundamentally identical to that of IBM and Microsoft's OS/2 Presentation Manager as well as Microsoft's recently announced Windows 2.0.

Tailored for 386 systems

Windows 386 is unique, however, in that it was developed specifically for personal computer systems based on the 32-bit Intel Corp. 80386 microprocessor.

Taking advantage of the powerful features of the 80386, Windows 386 offers capabilities beyond not only those of the more general Windows 2.0 but

Continued on page 41

Tecmar founder sees daylight, breaks for open field in PS/2 aftermarket

Medicine brought Martin Alpert into the microcomputing industry. Alpert, president of Cumulus Corp., a Cleveland-based add-in board vendor for the IBM Personal System/2, was once a practicing physician. As a pulmonary specialist, Alpert developed some medical diagnostic equipment and then founded a company, Tecmar, Inc., to sell it. After several years as a medical technology company, Tecmar became one of the first companies to release add-on memory and expansion cards for the IBM Personal Computer in 1981.

Alpert left Tecmar and founded Cumulus Corp., which recently released its first multifunction card for the PS/2 Micro Channel models along with a 5¼-in. external floppy disk drive that can act as an A drive. *Computerworld* West Coast correspondent James A. Martin talked with Alpert about the direction of the PS/2 aftermarket and Cumulus.

Alpert's computer career *began with medical equipment*

With many personal computer add-in board makers experiencing slower than usual sales as a result of the PS/2, was this a bad time for a start-up company to begin releasing products for the PS/2?

It was an outstanding time. We were one of the first with PS/2 add-in products, and we generally have better products. We had to add unique features because we're a newcomer in the market. We have a specific direction of being a PS/2 add-on supplier, while many other companies have a lot of other things that diverted their attention — like AST Research with computers and Quadram with graphics. Meanwhile, we could just jump on the PS/2, uninhibited by a past.

Does the PS/2 give you more or less of an opportunity to create add-in products?

There are substantially more opportunities because there are additional capabilities in the Micro Channel that we can build boards for that we could never think about building for the [IBM PC] AT bus.

Can you give me an example?

No, because I wouldn't want to preannounce our product plans.

With the AT still going strong, is there any interest on your part to create a product for that system?

Not at the present. We very much have our hands full with the PS/2.

The first generation of Mi-

Continued on page 40

Kapor lambastes state of PC software

Also sets stage for Lotus's upcoming personal filing tool at lecture

BY DAVID A. LUDLUM
CW STAFF

CAMBRIDGE, Mass. — Lotus Development Corp. founder Mitchell Kapor recently served up a cheery critique of the current state of personal computer software in an address that also laid a philosophical foundation for Lotus's forthcoming Agenda personal filing program.

Kapor made the remarks Oct. 19 in leading off a series of weekly lectures on "Computers, Work and Society" sponsored by Harvard University's Center for Lifelong Learning, an adult education institution.

Kapor described Agenda as "sort of a computerized Hefty trash bag" for filing away notes one might scribble throughout the day that can cross-reference the items on the basis of numerous common themes.

While promoting the product, he conceded that there was "a huge concern" at Lotus that the lack of a hand-held computer to run it on might "cripple" the program. That lack results in an interim capability that is "not ultimately satisfying but [is] workable," he said.

Kapor added that such a hand-held computer is "well within the realm of the technically imaginable." To the extent that a product like Agenda succeeds, he added, it might provide incentive for someone to invest the several million dollars necessary to make the small computer.

Kapor said Agenda will be available around February or March.

Good news, bad news

While saying existing PC tools are extremely useful in many endeavors, Kapor criticized current PC technology for being difficult to use and of little use to the ordinary person.

"It's important to understand that this is the case and why it's the case, especially in light of the fact that people who are selling software and hardware would like you to believe precisely the opposite," he said.

"My view is that computers should work more like people, not the other way around, and that we really have a challenge to make them more accessible, more inviting and more natural to use," Kapor said.

He made it clear, however, that he was not talking about sophisticated artificial intelligence; lack of understanding of the human mind, he said, limits the ability to make a computer that thinks like a person.

More practical, Kapor said, would be software that incorporates natural language commands or deals with every-

Continued on page 41

Tandy laptop occupies catbird seat in booming market

BY JULIE PITTA
CW STAFF

Laptop computers have been something of an unlucky orphan. Although they offer personal computer capabilities in a nifty package, end users have been slow to adopt laptops, leaving them a technology in search of a home.

However, laptops may have finally cracked the door to the corporate environment, according to industry observers. "We're projecting very strong growth for laptops," said Bill Lempesis, PC industry analyst at Dataquest, Inc. "As the prices go down, they begin to attract a whole new group of customers."

A formidable new player has recently jumped into the laptop arena. In August, Tandy Corp. introduced its 1400 LT laptop PC, an Intel Corp. 8088-based system with 768K bytes of random-access-memory and two 3½-in. floppy disk drives. Priced at $1,599, Tandy's laptop is less expensive than the three market share leaders. Toshiba's 1100 Plus, an Intel 8086-based PC list-priced at $2095, has held the pricing edge among the market share leaders.

Lempesis praised Tandy's 1400 LT. "It's a very competitive machine. It stacks up with any of the others already out there," he said. "And the pricing is aggressive."

The new laptop may help Tandy revamp its image, which Lempesis has compared with Rodney Dangerfield: "They get no respect." During the last year, Tandy has spruced up its Radio Shack stores, giving them a high-tech look it hopes will appeal to serious users.

Tandy's 1400 LT is currently being evaluated by corporate users who are trying to decide how it compares with the laptops already out in the market as well as where to use the machine.

Jeff Ehrlich, manager of product technology at General Electric Co., which has placed Tandy on its buying list for Microsoft Corp. MS-DOS-compatible needs, said he is currently looking at Tandy's laptop. "I'm sure we'll buy some of them," he said. "It's a beautiful little machine. It's got all the same stuff as the other guys, but it's cheaper. Plus, if it breaks, I can get it serviced in two minutes."

Ehrlich said the Tandy laptop will likely be used by sales agents scattered throughout GE's 300 subsidiaries. Unlike other laptop enthusiasts, he said he does not expect that laptops will replace desktop PCs nor that they will be widely used by traveling executives.

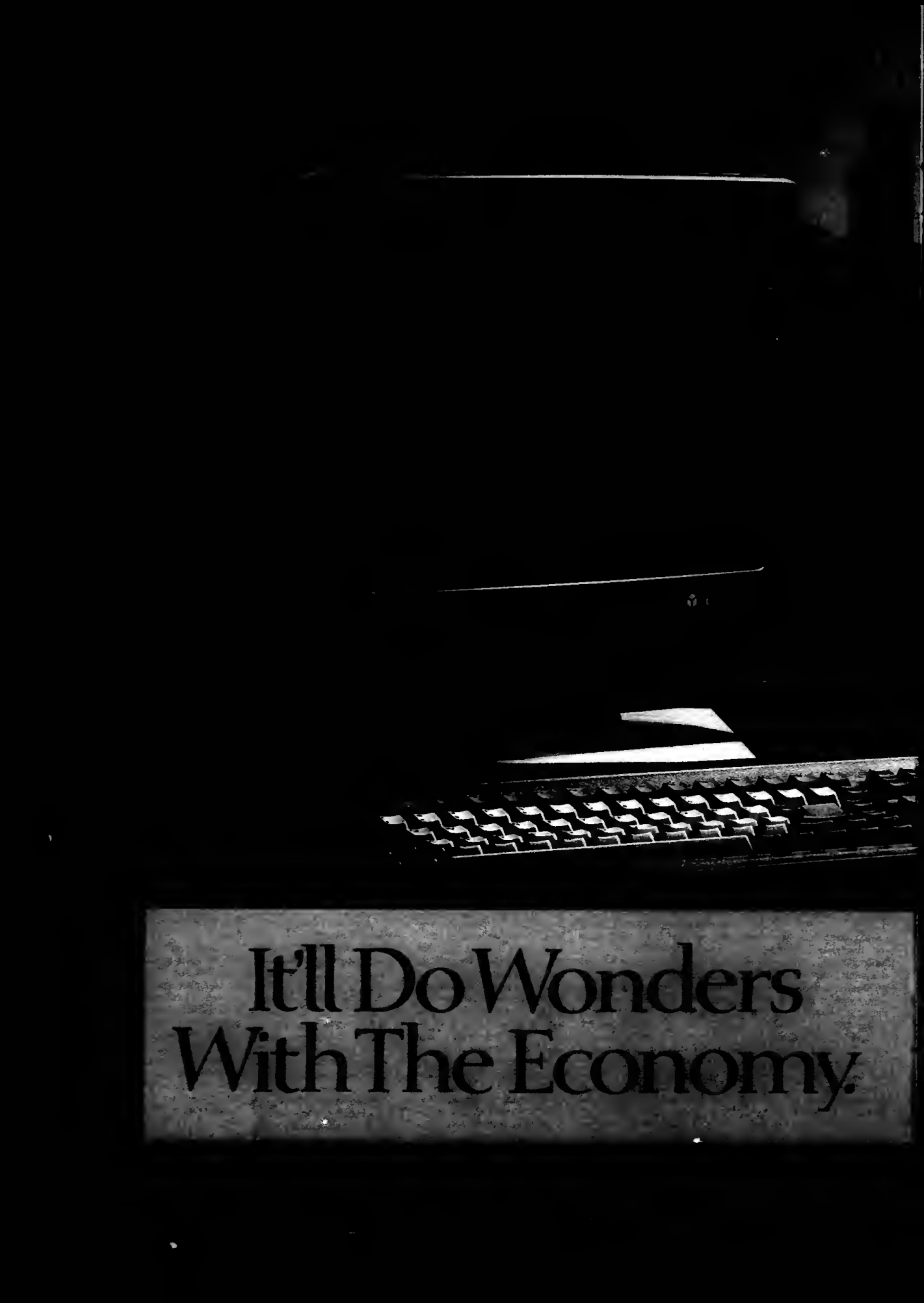
"There aren't any executives that are going to use them on a plane," he said. "You bring one out on a plane, and you make a spectacle of yourself. You look like a real nerd. Then you attract guys who see your PC, and because his kid has a computer, he thinks you're brothers."

Tandy's laptop offers a superior display compared with competitive machines, Johnson said, but at a better price. Although Toshiba's older T1000 laptop is priced at $1,195, it offers a smaller screen and weaker resolution when compared with newer laptops on the market.

Tandy 1400 LT

Price: $1,599

- Intel 8088 compatible
- NEC V-20 microprocessor
- 7.16 or 4.77 MHz
- Selectable clock speeds
- 768K bytes of random-access memory
- Two internal 3½-in. 720K-byte floppy disk drives
- 80 by 25 backlit display with 640- by 200-pixel resolution
- 13½ pounds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Tecmar founder

CONTINUED FROM PAGE 37

cro Channel add-in cards was pretty much a strict duplication of IBM's memory card for the PS/2. Isn't that generation about over now, and if so, what will the second generation of Micro Channel architecture cards be like?
Ours was not a duplication. We combined five IBM cards into one slot and added additional features not available on IBM cards. We have 8M bytes on our board, while IBM has two. IBM has extended memory only, while we also have EMS [Lotus/Intel/Microsoft Expanded Memory Specification] memory as well. You can implement EMS in hardware with our card, which is faster, or in software; the initial cards did it mostly in software. Also, we implemented EEMS [Enhanced EMS], and we're the only company to have EEMS on a Micro Channel card. The first generation primarily was using standard logic, and the second generation is using custom logic.

What was it like studying the Micro Channel in the beginning? Was it as complex as some might think? Is it a sound strategy?
The Micro Channel is much more complex than the old bus. However, it is also much better documented, so there's a trade-off. There's a lot of capability we still need to tap. We believe it's a very solid piece of work.

There's been a lot said about the difficulty of cramming multifunctions onto a board for the PS/2. What's the situation?
That's the result of people not thoroughly understanding the hardware and software necessary to do multifunctions on the Micro Channel.

How will Chips and Technologies, Inc.'s recent chip set announcement, which provides board makers with a Micro Channel interface, affect your plans?
Very little. Most companies already have their Micro Channel interfaces, so it's too late for all the people who developed their own [interfaces]. And those working with custom logic will put into their logic a great deal more than what Chips is offering. So it's too little for some and too late for others.

What are the opportunities for add-in board makers once IBM and Microsoft Corp.'s OS/2 becomes available?
OS/2 will make the memory requirements much greater, and that's mostly it. OS/2 will help a great deal with multiple processing environments, but the main thing is that everyone will need at least 4M bytes of random-access memory.

What is the ultimate path for Cumulus? Do you see the company remaining mainly as an enhancement vendor, or are you interested in expanding into systems?
We are definitely expanding our PS/2 line and then going into sophisticated communications products. We are not doing our own computers. We know who we are, and we are only interested in supporting computer manufacturers, not competing with them.

CMOS-based laptops to hit streets

BY ED SCANNELL
CW STAFF

Grid Systems Corp. announced a series of Intel Corp. 80286- and 80386-based laptop systems last week that it claims will be the first commercially available to use CMOS technology.

Toshiba Corp.'s Information Systems Division also announced a portable system, the 12-MHz 286-based T3200, which contains 1M byte of random-access memory, a 40M-byte hard disk and a 720K-byte 3½-in. diskette drive that is compatible with IBM's Personal System/2 series.

The Gridcase 1500 series supports IBM's 3270 terminal emulation and the company's Gridlink local-area network. With the systems' memory expansion capabilities, the series will be able to run the OS/2 operating system from IBM and Microsoft Corp., the company said.

The Model 1520 has a 10-MHz 80C286 processor, and the 1530 has a 12.5-MHz 386 unit. The 1520, in its standard configuration, costs $3,495 and is available immediately. The 1530 is priced at $4,695 and is scheduled to be delivered in January, according to the company.

Grid Systems also announced three portable disk drives, including a 3½-in. 1.4M-byte diskette drive, a 5¼-in. 360K-byte diskette drive and a 40M-byte streaming tape drive.

The company said it is targeting the machines at field sales, service and engineering professionals. "We expect a large demand for the 286 and 386 models because companies' and governmental agencies' battery-powered portables are powerful enough to provide rapid responses to large data base queries," said Barry Margerum, Grid Systems' vice-president of marketing.

Toshiba's T3200, priced at $5,499, has two expansion slots to accommodate specialized enhancements. The 18-lb system will make its public debut at this week's Comdex/Fall '87 and is scheduled to ship in January.

VGA board runs EGA tools

IRVINE, Calif. — AST Research, Inc. has unveiled an IBM Video Graphics Array (VGA)-compatible graphics board for IBM Personal Computers and compatibles that is said to offer full register-level compatibility.

The AST-VGA also reportedly provides graphics compatibility with the Enhanced Graphics Adapter (EGA), Color Graphics Adapter (CGA) and Hercules Computer Technology, Inc. graphics standards, enabling users to run existing EGA software now and higher resolution VGA software in the future.

AST's VGA card claims a graphics resolution of 640 by 480 pixels with a choice of up to 16 colors from a palette of 262,144 and a 720- by 400-pixel text resolution in full color or monochrome.

The half-size AST-VGA card is compatible with NEC Corp.'s Multisync monitor and is set to be available by the end of this month for $495.

AST also introduced the AST-3G Plus II, a half-size card said to provide EGA, CGA, Hercules, IBM Monochrome and Printer Adapter graphics modes for the IBM PC and compatibles. With an IBM 5154 Enhanced Color Display, the card offers up to 16 colors from a choice of 64 with a resolution of 640 by 350 pixels.

The card should sell for $395.

Kapor

CONTINUED FROM PAGE 37

day tasks.

"The thing that makes me the most optimistic is that I think a fairly simple set of ideas about what computers can be and how they might work could actually be quite powerful influences in helping break some of the big roadblocks to innovation," he said.

Kapor said the spreadsheet and the graphical user interface popularized by Apple Computer, Inc.'s Macintosh have been the only products to have a major impact on PC use.

"The sad thing to me — and quite astounding — is that that's pretty much the story today in terms of what has actually manifested itself in the world and had a major impact," he said.

'Useful' networking years away

Concerning networks, Kapor described this year as "the sixth annual year of the network" and said users "will probably be able to usefully connect the computers in the 10th or 11th year of the network."

But he looks forward to a melding of Agenda and Hypercard technology.

"It's pretty clear that what one wants to see happen down the line is something that combines the wonderful graphics and appearance of Hypercard with something that has the compatibilities with human styles of communicating that Agenda has," he said.

What ISDN is doing for McDonald's data networking capabilities is no small potatoes.

When McDonald's Corporation took a hard look at its telecommunications needs a few years ago, it saw 9400 restaurants in 46 countries, served by more than 20 networks. And a new restaurant opening every 17 hours.

McDonald's needed a telecommunications system that could grow with it, but one simple enough that the company could concentrate less on telecommunications and more on talking to customers.

The solution: the nation's first customer application of ISDN, the Integrated Services Digital Network, made possible by the cooperation of Ameritech's Illinois Bell and AT&T Network Systems.

McDonald's will use ISDN to send voice, data and video over ordinary telephone lines simultaneously. An AT&T 5ESS™ switch at Illinois Bell will support digital phones, integrated voice/data terminals, facsimile, voice mail, host access and modem pooling, giving McDonald's a real competitive advantage in its data networking capabilities.

"In business language, this means we're going to do an even better job for the 30 million customers that we serve every day," said Bonnie Kos, McDonald's Vice President of Facilities and Systems.

"ISDN provides an information outlet to every workstation, thereby eliminating time-consuming and costly wiring, as well as enhancing messaging and network control capability."

Thanks to ISDN, McDonald's will enjoy better customer service, more current market information, better tracking of product promotions, more efficient inventory control, and reduced administrative workloads.

Ultimately, higher level applications of ISDN on the public switched network will replace most of the company's myriad networks, linking all its offices and restaurants around the world.

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Windows

CONTINUED FROM PAGE 37

also those of the as-yet-unreleased OS/2 Presentation Manager.

OS/2, written for the 16-bit Intel 80286 microprocessor architecture, has limited abilities to run standard Microsoft MS-DOS 3 family software within the "compatibility box." Only one MS-DOS 3 series program can run at a time (although most pop-up utilities will work) under OS/2, and it cannot run within the OS/2 Presentation Manager. Programs running in the OS/2 compatibility box can, if they have bugs, compromise the integrity of programs and files throughout the system.

These limitations of MS-DOS 3.X software under OS/2 are inherent limitations of the 286 chip rather than OS/2 flaws. They are inevitable results of OS/2 having been written for 286-based systems.

The 386 microprocessor, on the other hand, has built-in virtual machine features that make it possible to provide multiple virtual machines capable of creating multiple Intel 8088 and 8086 MS-DOS 3 series-compatible environments. Windows 386 takes advantage of these features and can do things now that OS/2 won't be able to do for several years.

Unlike earlier versions of Windows, Windows 386 can run standard MS-DOS 3 family software in Windows even if that software has not specifically been written for Windows. The virtualization of the hardware environment by Windows 386 makes this possible.

The result is that with Windows 386, you can write using your current word processing software while your current spreadsheet does a complex recalculation, your current data base program does a data extract and series of reports and your current communications program downloads a file.

What's more, you can do it all within a Macintosh-like windowing environment that lets you move easily from one window to another to monitor the programs.

Add all of this to the fact that Windows 386, like Windows 2.0 and the OS/2 Presentation Manager, implements IBM's Systems Application Architecture common user interface, and you've got a product that everyone's likely to want. You've also got a good reason for buying 386-based systems, if you've got the choice.

Zachmann is vice-president of research at International Data Corp.

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Synchronous and asynchronous communications modes as well as simulated full-duplex employing advanced CCITT V.32 trellis code modulation and fast turnaround ping-pong technology are also part of the package. Plus you'll get the capability to link up with a range of networks, including SNA. And soon V-series technology will offer an X.25 PAD option to further accommodate network environments of today. And the future.

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V-SERIES SMARTMODEM 2400

With adaptive data compression this modem can achieve an effective throughput of up to 4800 bps. Of course, it too offers point-to-point error control forward error correction, data flow control automatic feature negotiation and synchronous as well as asynchronous communications modes And like the V series Smartmodem 9600, it can link up with a wide range of networks, such as SNA, and be enhanced with an X.25 PAD option

V-series modems come in stand-alone versions and internal versions (V-series Smartmodem 9600B and V-series Smartmodem 2400B). Internal versions are bundled with our powerful new Smartcom III communications software.

And as yet another rebuttal to the argument for obsolescence, we developed the V-series Modem Enhancer. A separate stand-alone device that will upgrade current Smartmodem 1200 and Smartmodem 2400 external modems to the new standards set by the V series products

A closer look at the V-series product line will reveal to you a revolutionary technology designed to be the beneficiary of time, not its victim. So contact your Hayes Advanced System Dealer or call 800-635-1225 for the one nearest you.

Hayes

Hayes

Language battle

CONTINUED FROM PAGE 35

struction capabilities. Microsoft's graphics library, on the other hand, requires a user to code in the elements of a graphic piece by piece with several keystrokes.

Rob Dickerson, group product marketing manager at Microsoft, conceded that Borland's library would be easier to use, but he said the Microsoft program offers more flexibility because it allows a user to construct a graph from the bottom up.

Turbo C 1.5 also features overlapping — multiple source windows that run separate files simultaneously. Current Turbo C users can purchase the upgrade for $44.95.

Both Turbo C and Quick C offer the same type of context-sensitive Help systems that enable a user to get information on a particular function by placing the cursor on that item and hitting another key.

To bundle or not to bundle

Microsoft hopes to get a leg up on Borland by bundling a language debugger with Quick C, Dickerson said. The trouble-shooting tool is based on source code from Microsoft's Codeview debugger, which runs on the company's high-end language products.

Although most programmers consider a debugging tool an essential part of a language compiler, Borland said it will not include a debugger with the Turbo C upgrade. Instead, the firm reportedly is designing a stand-alone debugger that will be released in the first quarter of next year.

The separate development of a debugger reflects Borland's long-standing strategy of augmenting product revenue with sales from add-in tools, analysts said.

IBM spices

CONTINUED FROM PAGE 35

set of common data and create customized documents. The new Browsemaster can preview text and graphics in position on screen before they are printed out.

Bookmaster and Browsemaster will be shipped in December, according to IBM. The monthly license charge for Bookmaster is $330 and has a one-time charge of $8,500. The monthly licensing fee for Browsemaster is $115 and has a one-time price of $3,500.

Solutionpac/A is scheduled to be available next month for $5,888 and includes the 4216 Personal Pageprinter, the Personal Pageprinter Adapter/A, the Personal Pageprinter Adapter Licensed Program 1.2, the PS/2 mouse and publishing software.

The publishing software includes Adobe Systems, Inc.'s Postscript language, Aldus Corp.'s Pagemaker and Microsoft Corp.'s Windows. Consequently, users can print a document created by Pagemaker or any other Postscript-compatible software on the Personal Pageprinter or any other compatible typesetter.

In April, IBM announced entry-level desktop publishing products for its PS/2 Model 30, called the Solutionpac Personal Publishing System.

IBM also announced Drawmaster Workstation Support for the PS/2s. This capability allows PS/2 Models 50, 60 and 80 to act as Drawmaster workstations under the VM operating system.

Board

CONTINUED FROM PAGE 35

$350 and $400, Harris said, while the graphics card and network card sold separately would total $538. He added that the card will be compatible with all other Hercules cards and will free an additional card slot by integrating the video and networking.

With the board, users "can get the Appletalk connectivity, can share data among PCs and Macs, share peripherals, graphics and Ramfont [a display mode combining text and graphics] capabilities," Harris said.

The Network Card will be Hercules's first entry into the Apple world, but Harris said the open architecture of the Macintosh is fertile ground for future products. Hercules also expects to introduce a board for IBM's Personal System/2 by the end of the first quarter, Harris added.

Also announced was Write On, a what-you-see-is-what-you-get Ramfont word processing package. The software demonstrates the capabilities of the Hercules Ramfont display mode on the company's Graphics Card Plus and Incolor Card.

Write On displays multiple character sizes in a variety of type styles with very fast scrolling speeds, according to Scott Anderson, technical sales manager.

The software package offers text formatting, full text editing, cut-and-paste and three type sizes. The package comes with its own fonts, but users can design others. Write On can print in multiple fonts on the Epson America, Inc. and IBM dot matrix printers and compatibles, Anderson added.

Hercules said it will distribute 5,000 free copies of Write On at this week's Comdex/Fall '87 and that it will sell the software to its installed base of board users for $15 each. For new purchases, the software will be bundled with the Graphics Card Plus and the Incolor Card.

Harris said Hercules will give Write On source code to developers.

"If we get developers to support Ramfont, it will mean increased board sales for Hercules," Harris said. "We're not interested in getting into the software business but are interested in selling more boards. That's one means to an end."

Cinnabar offers PC-based tester

BY ALAN J. RYAN
CW STAFF

AUSTIN, Texas — Cinnabar Software, Inc. has introduced a personal computer-based software testing tool targeted at the more than 1000 on-line data base services across the U.S.

Checkmate is designed to automate the software testing process for such applications as on-line data bases, electronic mail systems, public and private data networks, asynchronous interfaces to communications networking components and multiuser minicomputer application software, according to Brian Eukel, president of Cinnabar. "There are hundereds of test tools available in the mainframe environment, but barely a handful in the PC environment," he said.

The tool reportedly minimizes latent software defects and can shorten both the testing cycle and the time it takes to bring software products to the market, according to Eukel. It can be used to develop and run regression, performance and stress-test scripts in Microsoft Corp.'s C programming language, he added.

Checkmate runs on an IBM or compatible PC and connects to the system being tested through one or two asynchronous communications lines. The program's main menu is patterned after Lotus Development Corp.'s 1-2-3, Eukel said.

Checkmate grew out of Cinnabar's testing experiences with Reston, Va.-based Telenet Communications Corp. "We tested many of the major systems at Telenet and kept saying, 'This isn't a good use of PC hardware; we had better automate this stuff,' " Eukel said. He took his product development experience, which includes five years with IBM, to help develop Checkmate.

A built-in log system reports and summarizes all test results, which allows the quality assurance department to run test scripts unattended, the president noted.

The single-quantity price is $2,995. Site licenses and multiple-copy rates are also available.

Waiting

CONTINUED FROM PAGE 37

upcoming OS/2 operating system, Ast has promised. Theoretically, it is the best of both worlds. Practically, it can be expensive and has the potential for compatibility problems. If anybody has one, let us know how it works.

Voice in the wilderness. Ashton-Tate has taken some heat from users, Wall Street and the press for not enhancing Dbase often enough and for losing key executives and developers. One conclusion drawn is that Ashton-Tate's near stranglehold oo the micro data base management system market is threatened as we move into a new generation of hardware and operating systems.

Robert M. Therrien, a Paine Webber analyst, says "Not to worry." According to Therrien, pent-up demand for the next version of Dbase is huge. Therrien is also bullish on the underrated research and development prowess of the Torrance, Calif. concern. Look for Ashton-Tate to be a key OS/2 data base player, Therrien argues. With Ashton-Tate on the move, and a host of new competitors working feverishly, the data base market will positively scorch next year.

Can't sue me. When Ashton-Tate Chairman Edward Esber threatened a group of Dbase clone vendors with legal trouble recently, he left out a couple of important points. He can't sue one leading cloner, Wordtech Systems, because of a promise made when Ashton-Tate acquired Wordtech's SQL technology. According to one source, the firm can't sue Fox Software either. It seems that during some acquistion discussions, Ashton-Tate became privvy to Fox's current technology as well as some future plans. This nondisclosurish relationship essentially prevents Ashton-Tate from taking Fox to task for copyright infringement. That may leave Clipper vendor Nantucket Corp. holding the bag.

GEM in the rough? Just when you thought the graphics user interface wars were over, Digital Research announces a new battle plan. The firm, which hawks GEM, says it will move its interface over to the OS/2 Presentation Manager, allowing users to run a graphics user interface under a graphics user interface. Strange as it sounds, it makes some sense for users of current GEM applications, such as Xerox's Ventura Publisher, who wish to move onto the next generation.

What's George up to now?. George Morrow, founder of ex-CP/M machine vendor Morrow Designs and creator of a laptop now marketed by Zenith, has something new up his sleeve. The technologist/philosopher, now with Nestar, is readying a new technology dubbed "Parallel I/O Processing" that will speed performance by freeing a micro's processor from disk-drive access tasks.

See C 5.0. Microsoft C Optimizing Compiler Version 5.0 has made it through beta testing and reportedly will be on shelves this month. A low-end Microsoft C product, Quick C 1.0, is also scheduled to debut soon.

Barney is a *Computerworld* senior editor, microcomputing.

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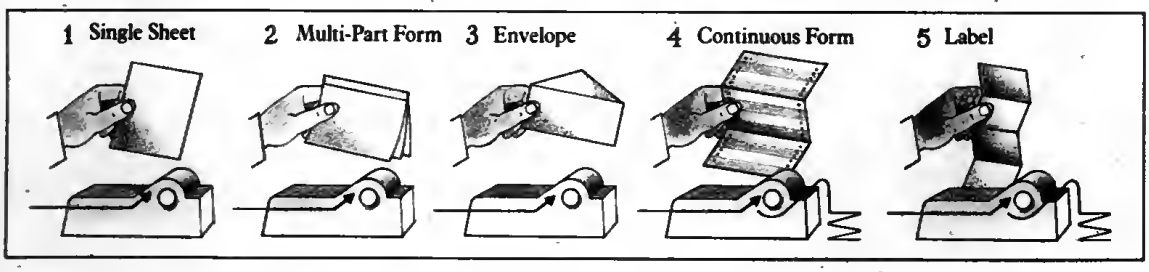

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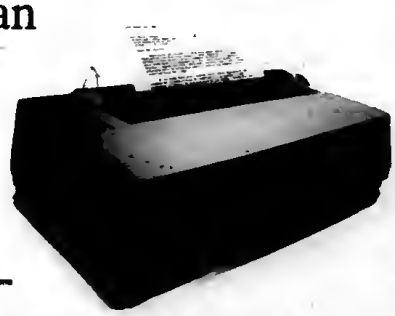

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NEW AT COMDEX/FALL '87

Dayflo Software Corp. is announcing its information tracking system for laptop computers. The package, called **Dayflo Tracker-720**, costs $99.95. Dayflo, 17701 Mitchell Ave. N., Irvine, Calif. 92714. 714-474-1364.

Softkey Software Products, Inc. is introducing a line of vertical software programs. They are **Keyretailer**, for point-of-sale applications, **Key Autoservice**, for control and accounting in the automobile service industry, and **Key Wholesaler**, for wholesale distributors. Single-user versions cost $1,995; multiuser versions cost $2,695. Softkey, Suite 300, 260 Richmond St. W., Toronto, Ont., Canada. M5V 1W5. 416-598-5033.

Softshell Systems is releasing **Nautilus 2.0**, a Microsoft Corp. MS-DOS-based utility package for managing user environments in which multiple microcomputers and applications are used. Nautilus 2.0 costs $133.95. Softshell, Suite 824, 2479 E. Bayshore, Palo Alto, Calif. 94303. 415-856-8844.

The PC Viewer series is being introduced by **In Focus Systems, Inc.** It is a family of electronic transparency viewers said to allow desktop presentations developed on IBM or Apple Computer, Inc. microcomputers to be displayed on overhead projectors. Resolution is up to 640 by 480 pixels. Support is provided for normal and reverse video functions, and both red-green-blue and composite video inputs are standard. Prices range from $895 to $2,495. In Focus, 7997 W.W. Mohawk St., Tualatin, Ore. 97062. 503-692-4968.

Blue Chip Electronics, Inc. is introducing Intel Corp. 80286- and 80386-based desktop systems.

Two versions of the 286-based system are available. One is a 10-MHz machine priced at $1,595, which includes 640K bytes of random-access memory (RAM) and IBM Enhanced Graphics Adapter capability; the other is a 12-MHz system priced at $1,795.

The 80386-based system runs at 16 MHz and comes with 1M byte of RAM. Blue Chip, 7305 W. Boston St., Chandler, Ariz. 85226. 602-961-1485.

Computer Components Corp. is announcing **Heritage**, a line of 80286-based IBM-compatible personal computers. Prices range from $1,595 to $3,495. Computer Components, 1,000 Perimeter Park Drive, Morrisville, N.C. 27560. 919-469-9301.

Diskdoubler, a short card that fits into any slot on the IBM Personal Computer XT or PC AT, is being announced by **Datran Corp.** Diskdoubler is said to double the capacity of an existing hard disk and increase speed access time as well. It costs $295. Datran, 2505 Foothill Blvd., La Crescenta, Calif. 91214. 818-248-8780.

Video Seven, Inc. is introducing **Vega VGA**, an IBM Video Graphics Array adapter for the PC XT and AT as well as the IBM Personal System/2 Model 30. Compatible with existing graphics standards and equipped with analog and digital connections, the Vega VGA costs $499. Video Seven, 46335 Landing Pkwy., Fremont, Calif. 94538. 415-656-7800.

Summagraphics Corp. is unveiling the **Bit Pad Plus**, a graphics tablet based on Charge Ratio technology. According to the vendor, it provides a modular reliable system that is compatible with standard formats and features. The 12- by 12-in. tablet comes with its own stylus and four-button cursor and costs $495. Summagraphics, 777 State St. Extension, Fairfield, Conn. 06430. 203-384-1344.

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NETWORKING

DATA STREAM

Patricia Keefe

Comdex lacks LAN answers

Network users seeking answers, if not guidance, at Comdex/Fall '87 regarding the next generation of microcomputer connectivity had best set their sights a little further on the horizon. Start with late first-quarter 1988.

It appears unlikely that any of the three major players in the local-area network (LAN) market — IBM, Novell or 3Com-Microsoft — much less software developers and third-party LAN hardware suppliers, will reveal much in the way of concrete information at the annual microcomputer extravaganza in Las Vegas this week.

For example, who beside 3Com has committed to licensing the LAN Manager? If you'll recall, Microsoft's unveilings of Windows, MS OS/2 and LAN Manager predecessor Microsoft Networks were star-studded events featuring impressive lineups of committed third parties eagerly singing the praises of Microsoft.

Those backup vocals are glaringly absent from the LAN Manager. Almost four months after the initial announcement,

Continued on page 54

3+ network to connect to VAX

Product co-developed with Virtual Microsystems gets Comdex demo

BY PATRICIA KEEFE
CW STAFF

SANTA CLARA, Calif. — 3Com Corp. last week announced a strategic partnership with Virtual Microsystems, Inc. in San Mateo, Calif., that will connect 3Com network customers with the Digital Equipment Corp. VAX environment.

Under the agreement, the two vendors will comarket 3Com's 3+ network system software with Virtual Microsystems' Network Co-Processor (NCP) and DEC terminal emulation software.

The first public demonstration of this capability is scheduled to be held at 3Com's booth at Comdex/Fall '87 in Las Vegas this week.

Another possibility

A second DEC connectivity option — that of running 3+ coresident with Transmission Control Protocol/Internet Protocol (TCP/IP), enabling users to link directly to a VAX running under TCP/IP — is slated to be announced at Localnet '87 next week in Los Angeles, confirmed Hugh MacWorth, 3Com's manager of work group communications. 3Com is currently betatesting 3+ over Bridge Communications, Inc.'s PCS/1 TCP/IP-compatible server, he said.

3Com joins a bevy of vendors — including Banyan Systems, Inc., Apple Computer, Inc. and Novell, Inc. — that either have announced links to the DEC environment or plan to do so early

Continued on page 52

X.400 flies in Europe, lags in U.S.

BY ELISABETH HORWITT
CW STAFF

GENEVA — The big news at the recent Telecom 87 show was that the CCITT X.400 electronic mail standard is becoming commercially viable at last — but in Europe, not the U.S.

One of the show's highlights was an X.400 interoperability demonstration, which, unlike the X.400 demonstration at the Hannover Industrial Faire in West Germany in March, involved the U.S. companies Telenet Communications Corp., Dialcom, Inc., AT&T and IBM.

The recent demonstration, sponsored by the UK consulting firm Level-7 Ltd., involved X.400-based electronic mail transfer among 21 computer, software and mail service vendors. To participate, companies "had to commit to introducing an X.400 product within 12 months," said Level-7 technical director Ian Valentine.

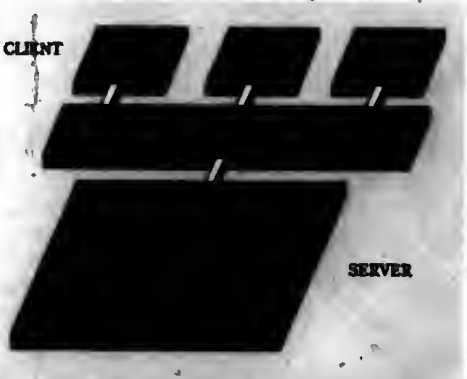
However, not all of the products and intervendor connec-

Continued on page 53

Data View

Client/server computing architecture

*Corporations moving to a new computing architecture**



*The server may be providing one or more of the listed functions to the client; some servers will be optimized for a given task, others will be based on general-purpose architectures like DEC's VAX to provide a multitude of services to the client

INFORMATION PROVIDED BY FORRESTER RESEARCH, INC.

Telecom net fights AIDS

BY ALAN ALPER
CW STAFF

NEW ORLEANS — The Public Health Foundation (PHF) has expanded its telecommunications network by offering a group of services that will enable health officials nationwide to access the latest information about acquired immune deficiency syndrome (AIDS).

At a recent medical professionals' conference here, PHF, a national nonprofit organization, announced AIDS-Net, an extension of its CCITT X.25-compatible public-switched telecommunications network that is operated by Dialcom, Inc. in Rockville, Md.

Continued on page 54

Inside

- 3Com acting as OEM for Novell's Netware. Page 52.
- Xerox rolls out VAX, Microvax versions of XNS. Page 55.
- Anchor line of PC modems aweigh. Page 58.


```
printf("Hello, world\n");
```

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Novell Message Handling Service leads Networld 87 rollout parade

BY PATRICIA KEEFE
CW STAFF

DALLAS — Novell, Inc. kicked off its recent product-packed Networld 87 trade show by announcing plans to bundle its Message Handling Service (MHS) with future versions of its Netware network operating system starting in the first quarter of 1988.

Novell also added programming utilities to MHS to simplify writing to the MHS interface.

MHS is a message-transfer and routing service that allows developers to add communications to their applications. It was jointly developed with Action Technologies, Inc. in Sunnyvale, Calif. More than 40 MHS tool kits have been shipped, according to Novell, which expects applications based on MHS — including distributed data bases, electronic mail, remote order entry and wide-area financial reporting — to appear by mid-1988.

Products unveiled at the second annual Networld included the following:

Codenoll Technology Corp. introduced a low-cost fiber-optic network that was used to tie together almost every booth at the trade show.

Codenet-Fiber Optic Cabling Universal Solution, or FOCUS, allows Ethernet, Manufacturing Automation Protocol, Arcnet, IBM's PC Network and Token-Ring Network, the ANSI Fiber-Optic Distributed Data Interface standard and other network technologies to operate across the same fiber-optic cabling system, said the Yonkers, N.Y.-based vendor.

NETWORLD 87

Installed throughout the almost 65,000-sq-ft Infomart exhibition hall, Codenet-FOCUS included 12-miles of fiber-optic cable attached to more than 700 devices, including file servers, workstations, gateways, bridges and printers. The network consisted of two backbones and a multitude of work groups.

The total installed cost of the network was $892,000, or an average installed cost of $1,280 per 10M bit/sec. connection, including adapter cards, transceivers, cables, couplers and repeaters as well as labor.

As expected, Novell competitor **Banyan Systems, Inc.** in Westboro, Mass., gave the first demonstration of its Vines network operating system running on Digital Equipment Corp.'s Microvax II [CW, Oct. 26]. Banyan is providing connection to a DEC VAX processor through terminal emulation at the personal computer or server level. Although the current version of Vines on the VAX does not support Decnet, a spokesman said Banyan plans to add that capability next year. Pricing is not yet available.

Javelin Software Corp. in Cambridge, Mass., introduced a network version of its Javelin Plus business analysis software. The latest release of Javelin Plus features a modular structure that enables network users to share components of the Javelin model. For example, an import command allows users to Import variables, work sheets, macros, building blocks, time periods or even the entire contents of one model into another model, the vendor said.

Other capabilities include data integrity and security, dynamic sharing of Javelin Plus and non-Javelin files, shared peripheral support, application-specific Help and flexible reporting formats. The network version of Javelin Plus runs on many popular local-area networks (LAN). A six-user package will be available in December for $995. Additional users can be added two at a time for $295.

Ray-Net Communications Systems, Inc. exhibited **Ray-Lan,** a Netware-compatible wireless network. Ray-Lan consists of a microcomputer adapter card, a small radio frequency transceiver and Netware.

Netline, Inc. introduced Manylink, a random-access memory-resident software package said to enhance Netware networks by providing background, peer-to-peer file transfer and extensive resource and peripheral (including multiple file server) sharing.

Several Arcnet products also debuted:

Computadoras Micro exhibited a full line of Arcnet controllers for the IBM Personal Computer and Personal System/2 as well as a full line of Arcnet hubs.

Lanmaster displayed Arcnet cards for the PS/2, a VES read-only memory 2.1 with multiple Microsoft Corp. MS-DOS capability, four-port Internal Active Hubs, 16-port Active Hubs and the Surge-Protected Sparky passive hub.

Acer Technologies unveiled the Acer 1100, an Intel Corp. 80386-based file server. It is networked to Acer workstations via Arcnet and Ethernet technologies running under Netware. Price?

Raycom Systems, Inc. in Boulder, Colo., unveiled the Arcnet I/O Module for Raycom's 5100 series Fiber Optic Multiplexer, which allows transmission of multiple Arcnet LANs over fiber cable. Configured with the Arcnet I/O module, the 5100 series can replace eight Arcnet extenders using a single pair of fibers. The Arcnet I/O Module costs $1,800.

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Telenet and Tymnet rev up switches

BY ELISABETH HORWITT
CW STAFF

GENEVA — Rivals Tymnet, McDonnell Douglas Network Systems Co. and Telenet Communications Corp. both introduced 32-bit packet switches last week, providing badly needed upgrades to their high-end lines, according to George Colony, president of Forrester Research, Inc. in Cambridge, Mass.

"Both Tymnet and Telenet's existing packet-switch architectures are ancient," Colony commented. "BBN Communications was giving them a hard time at the high end."

Both vendors' new switches implement a modular, multiprocessor architecture based on the Motorola, Inc. 68020 processor.

By using a standard 32-bit microprocessor, Telenet was able to provide throughput of "an order of magnitude higher" than that of older Telenet switches at approximately the same price, according to the U.S. Sprint Communications Co. subsidiary's president, Paolo Guidi.

Repairs simplified

Standard components also make the new box easier and less expensive to repair, he indicated.

Telenet's TP4/III is said to support up to 8,000 packet/sec. and more than 10,000 simultaneous virtual circuits. It supports about 500 ports at a cost of between $1,500 and $2,000 per port, Telenet said. Future upgrades will increase throughput to 12,000 packets and 350 call/sec., according to the vendor.

Available immediately, the switch is said to be fully compatible with Telenet's existing TP3/II access concentrators and TP4/II packet switches.

Tymnet's Series 7500 Turbo Engine is said to support 3,000 packet/sec. It will run software developed for Tymnet's older switch line; however, software developed for the 7500 will not run on other Tymnet switches, the company said.

The new switch is scheduled for commercial release in the fourth quarter of 1988. Pricing is unavailable.

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3+ to connect

CONTINUED FROM PAGE 49

next year.

3Com estimated that between 25% and 50% of its customer base also uses VAX processors. "The reason we went to the trouble of an alliance mostly had to do with our clear focus [in 1988] on larger companies," said Doug Pollack, 3Com's director of corporate marketing. "It requires that we develop a better set of DEC and IBM [Systems Network Architecture] connectivity."

Bridge is not supplying 3Com with DEC connectivity at the file server and application server levels, Pollack explained, because Bridge's expertise tends to be at the high end. And 3Com's partnership with DEC is more likely to concentrate on parallel access applications, MacWorth added.

File server capability

Virtual Microsystems' NCP reportedly allows VAXs to act as file servers for 3+ work groups while also providing VAX terminal emulation capabilities. The 3+ program, installed with the NCP, reportedly permits IBM Personal Computers to share Microsoft Corp. MS-DOS-based application files, access DEC VMS-based files, share printer resources and act as VAX terminals anywhere on 3+ or DEC's Decnet.

3Com users will be able to run standard, off-the-shelf 3+ networking software within the VAX computing environment, said William Thomasmeyer, Virtual Microsystems' vice-president of marketing. Virtual Microsystems has certified VAX-to-PC compatibility of file and print services as well as terminal emulation and file-transfer capabilities under 3+, he added.

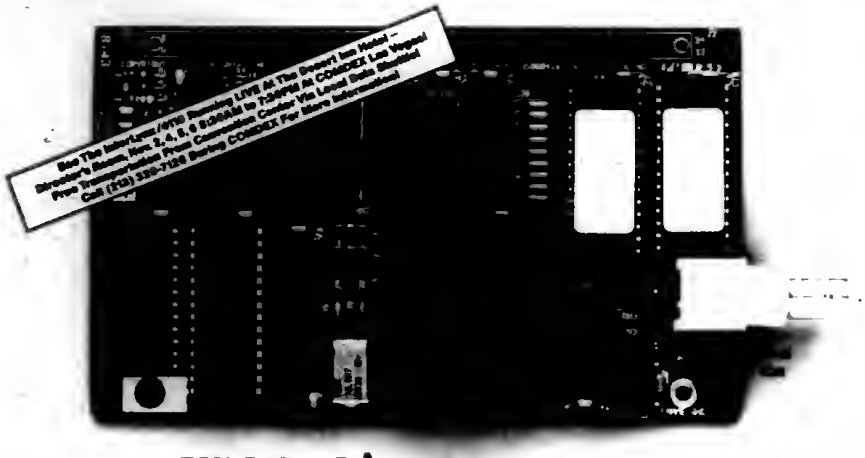
The NCP product provides file-transfer service for 3+. This service translates VMS to MS-DOS and vice versa, restructuring text to appear in standard format under either operating system software, Virtual Microsystems said.

An Intel Corp. 80286-based coprocessor at the heart of the NCP enables 3+ to run on a VAX. The coprocessor connects to a Virtual Microsystems expansion cabinet that contains an IBM Personal Computer AT-compatible bus for standard Ethernet or IBM Token-Ring network adapter cards.

NCP's VAX-resident portion of the NCP software translates MS-DOS I/O requests into VMS I/O requests. The PC-resident portion provides DEC VT220-compatible terminal emulation.

As part of the comarketing agreement, 3Com and Virtual Microsystems will hold demonstrations together at computer trade shows, will develop joint sales materials and will offer promotional programs and training for 3Com authorized dealers.

Available immediately, a typical VAX-to-3+ configuration ranges from $12,500 for the Microvax version to $25,000 for a high-end VAX with a Unibus architecture.



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3Com becomes OEM for rival

BY PATRICIA KEEFE
CW STAFF

SANTA CLARA, Calif. — In what might be seen as an awkward turn of events, 3Com Corp. recently found itself a proud OEM of archrival Novell, Inc.'s Netware network operating system.

The contract could prove embarrassing to 3Com, which sells 3+, a product that competes with Netware. But despite the rivalry between the two vendors, one of the most popular user-configured departmental network implementations consists of 3Com hardware and Novell software.

The OEM pact with Novell originated with new 3Com subsidiary Bridge Communications, Inc., which last month won a large contract requiring Netware. 3Com President William Carrico, formerly president of Bridge, declined to identify the customer but did say the order involved 600 to 800 adapter cards and perhaps 20 copies of Netware.

A call to 3Com Chairman William Krause for comment was referred to Carrico.

'Aagwkward position'

Although Carrico characterized the OEM agreement as being in keeping with the new 3Com's multivendor approach to connectivity, he was quick to emphasize that his sales force will focus on selling 3Com's 3+ network operating system. "It is perhaps an awkward position, but the operating system of choice [for us] is 3+," Carrico said.

However, the OEM deal with Novell will enable Bridge to supply Netware to customers who demand it, Carrico conceded. "Clearly, a lot of 3Com adapters support Netware, and we can't ignore the installed customer base," he said. "Just as we support [Digital Equipment Corp.'s] VMS on a VAX, we may on occasion have to support Netware, too."

Several sources said Bridge had to resell Netware for competitive reasons. Bridge was reportedly in danger of losing a large bid to another Novell OEM and told the customer that it, too, could supply Netware. Bridge got the contract, then followed through with an arrangement with Novell, sources said.

To write a driver for Netware, Bridge had to sign an OEM agreement with Novell, according to Carrico.

X.400

CONTINUED FROM PAGE 49

tions on display will be available to U.S. users in the foreseeable future, vendors indicated. For example, while participants Digital Equipment Corp. and Hewlett-Packard Co. currently offer commercial X.400 products in the U.S., IBM does not.

IBM revealed at Telecom 87 that it would extend X.400 support to several of its major software environments, but only in Europe.

"I have talked to many of our customers, and we definitely see more of an OSI [Open Systems Interconnect] business requirement in Europe than in the U.S.," said Ellen Hancock, president of IBM's Communication Products Division. She added that IBM plans to introduce X.400 products when U.S. demand justifies such a move. This is the same way IBM approached its offerings based on other OSI protocols such as X.25.

Growing European demand for X.400 products has left IBM and other U.S. vendors little choice about supporting the standard if they want to compete abroad, according to Audrey Mandella, who recently became director of European research for The Yankee Group in Boston. "X.400 is extremely important to Europeans, since it represents the first real implementation of Open Systems Interconnect standards," she added.

There is some indication, however, that American customers will need to demonstrate a stronger need for the standard before dominant U.S. computer vendors like IBM and carriers like Telenet provide X.400 in the U.S. as a way to link up with their archrivals' systems.

"Right now, if a customer jumps from our service to another's, they lose touch with all their correspondents on MCI Mail," said MCI International spokeswoman Karen McGown. This will not be the case if X.400 networking forces all carriers to give competitors' subscribers access to their customer bases, she added. "When the service gets homogenized, vendors will just have to come up with new features they haven't thought of" to differentiate their products.

"Prospects are not good" for similar connections with other U.S. electronic mail services, according to Telenet President Paolo Guidi, who pointed out that an X.400 connection would allow customers to "migrate from one service to another because of predatory pricing."

Telenet announced that it will provide future connections between its X.400-based electronic messaging service, Telemail 400, and X.400 services from foreign carriers Telecom and OTC in Australia, Teleo in Italy, DGT in Taiwan and Telemail Ltd. in the UK.

Earlier, Telenet had announced X.400-based connections between Telemail 400 and several private, host-based X.400 systems, beginning with Data General Corp.'s Comprehensive Electronic Office.

IBM's Telecom 87 announcements included an enhanced X.400 Message Transfer Facility, which provides X.400 messaging to VM/SP and VSE/SP users, and an X.400 Professional Office System (Profs) Connection Program that does the same for users of the firm's Profs.

All IBM X.400 products, including the previously announced Distributed Office Support System and MVS offerings, will be available in Europe during either the third or fourth quarter of 1988, IBM said. No time frame was given, however, for availability in the U.S.

IBM's European X.400 offerings will arrive too late for Datamont, a subsidiary of the Milan, Italy-based holding company Montedison S.p.A. The firm is currently working on a worldwide corporate OSI X.400 network that will link a variety of systems, including IBM's.

Datamont is using X.400 software from Retix. The firm will not use IBM's OSI products because of their late-1988 delivery date and because "you have to use all of [IBM's Systems Network Architecture], and we are trying to avoid that," said Sergio Conti, Datamont's marketing manager for communications engineering.

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LAN answers

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3Com appears alone in its support. Microsoft protests that it is working with a number of interested third parties, but compared with past Microsoft announcements, these developers seem inordinately shy about revealing their plans.

The really big question for third-party network vendors, independent software developers and users alike, boils down to IBM. So what *is* Big Blue going to do? It's possible that IBM will at least clarify its position on the LAN Manager at a Comdex press conference tomorrow, perhaps also unveiling a Systems Application Architecture programmer kit.

That's the same press conference, incidentally, at which IBM is expected to unveil the delivery date(s) for OS/2 Extended Edition. One recent published report quotes an IBM executive as saying IBM will not license either the LAN Manager or Netware, instead developing its own LAN products, thank you very much. Hardly surprising, that statement still leaves users hanging.

Support to stay?

A number of network analysts speculate that IBM will continue to support Netware while also maintaining compatibility with the LAN Manager. One option is for IBM to quietly license just the redirector, incorporating it into OS/2 Extended Edition. To do so is no skin off IBM's nose, and it would certainly make Bill Gates' day. Besides, IBM is thought to be a year away from unveiling competitive LAN products.

Where IBM is expected to deviate from Microsoft, and everyone else, is in the area of host connectivity. That's where IBM will wield proprietary hooks, chips and software in order to control access to IBM mainframes. Third parties will be able to write to these products, but they'll do it IBM's way or no way at all, observers predict.

Novell has CXI, Phasor Systems, Dialogic, Softcraft, Oracle (watch for an announcement from these two tomorrow) and perhaps even IBM to bolster its mainframe connectivity efforts. 3Com has Bridge. And Microsoft has indicated it will leave this arena to third parties.

What's interesting is that an unusually talkative IBM exec did not rule out co-development of all or part of OS/2 Extended Edition with another vendor. Analysts point to Novell as a prime candidate. But then again, Novell is a master of publicity.

Even as developers await some signs from IBM and Novell, it won't be until February that they can attend the first OS/2 LAN Manager development seminar. (Novell meets with its independent software developers in February also.)

The question here is just how functional the LAN Manager will be. Will developers have to write their own front ends? More information seems to be another four months away. All this means Comdex-goers can also forget about any software announcements proclaiming LAN Manager support. It's much too early for that, say analysts, except of course from the vaporware dispensers. "In this world of vapor, an idea is often a product," jokes Nate Goldhaber, president of TOPS, formerly Centram.

As for Novell, it won't comment on its LAN Manager and OS/2 plans other than to say it will license neither and support both. Observers speculate that Novell will get OS/2 help either from IBM or by licensing the operating system after all. Either way, Novell is unlikely to tip its hand until IBM reveals its plans. Both have mapped out their options; it seems everyone else will have to wait until next year to hear the final decisions.

Keefe is a *Computerworld* senior editor, networking.

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Telecom net

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AIDS-Net will enable AIDS coordinators from the 50 states, 25 cities and counties with the greatest number of AIDS cases and the National Centers for Disease Control (CDC) to more quickly obtain and share AIDS-related data, public health officials said. The network will offer electronic mail and bulletin board services and is expected to go on-line later this month, said Marilyn Bardsley, Dialcom's vice-president of marketing and business development.

"AIDS-Net will help us get late-breaking developments on AIDS research to public health officials," said James D. Bloom, CDC's acting assistant director for AIDS. Information such as CDC's case statistics, educational materials and research papers will be collected by PHF and stored in data bases on Dialcom's computer complex in Rockville.

PHF said it intends to add other data bases containing recently published medical journals as well as data compiled by the U.S. Department of Health and Human Resources and the National Institute of Health. Users will be able to enter the network via standard microcomputers using a modem by dialing up local Telenet, from GTE Telenet Communications Corp., Tymnet, McDonnell Douglas Network Systems Co.'s Tymnet or toll-free numbers.

Although billed as a one-year pilot program, Bardsley said Dialcom expects the network to continue as long as it is useful. Dialcom's costs to run the network for one year were estimated at $37,500, Bardsley noted.

NEW PRODUCTS

Local-area network software

Xerox Corp. has announced Digital Equipment Corp. VAX and Microvax versions of its **Xerox Network Systems** (XNS) software.

XNS 4.0 for VAX/VMS resides on DEC systems running VMS Version 4.5 and on Xerox 8000 file servers. It supports the Xerox Distributed Mail application, allowing users of DEC's All-In-1 and VMS/Mail packages to route messages to electronic mailboxes on an XNS network and to receive mail from XNS users.

XNS 4.0 also allows a VAX to allocate Xerox printer services to other systems in a DEC environment and allows users to access remote Xerox laser printers on a Decnet network. VAX users also can store files on Xerox file servers.

XNS 4.0 costs $9,995 per VAX system or $6,000 per Microvax system.

Xerox, P.O. Box 24, Rochester, N.Y. 14692. 800-832-6979.

Network management

J. A. Lomax Associates has released **Version 2.0** of its **Network Management Report Utilities**, said to provide network users with reports on disk use and system security.

Users can see how the network disk space is being used, who is using it and where space is available. The package also enables users to find files that can be deleted or stored off the network. Optional sorting is also included.

Network Management Report Utilities Version 2.0 uses the same interface as Novell, Inc.'s Syscon and Filer, the vendor said. Users get immediate on-screen viewing using point-and-shoot reporting. Additionally, programs may be included in batch reports using command-line execution.

The software costs $159. Registered users can upgrade for $35.

J. A. Lomax, Suite 130, 695 DeLong Ave., Novato, Calif. 94945. 415-892-9606.

Customer-premise equipment

A T1 channel service unit (CSU) designed to provide the link between customer equipment and a T1 facility has been announced by **Datatel, Inc.**

The **DCP3551** is a 551A-type CSU for use on 1.544M bit/sec. T1 facilities. It is Federal Communications Commission-registered and meets or exceeds all requirements for T1 service, including FCC Parts 15 and 68 and AT&T Technical Publication 62411.

The Datatel T1 CSU can be frequency-locked to an external timing source and can accept timing from either a primary or backup external source.

The DCP3551 is priced from $1,750.

Datatel, Cherry Hill Industrial Center, Pin Oak and Springdale Roads, Cherry Hill, N.J. 08003. 609-424-4451.

Links

Systems Software Marketing, a division of Sterling Software, Inc., has introduced IBM Systems Network Architecture/Synchronous Data Link Control (SNA/SDLC) versions of its **Tracs** and **Supertracs** communications software.

Tracs/SNA performs SDLC batch communications between IBM mainframes and a variety of remote devices. **Supertracs**/SNA adds the ability to support multiple transmissions, among other SNA features. Both use IBM's VTAM, which permits communications over SDLC links.

Tracs/SNA for IBM's OS/MVS costs $18,000. The OS/MVS version of Supertracs/SNA costs $35,000.

Sterling Software Marketing Division, #100, 11050 White Rock Road, Rancho Cordova, Calif. 95670. 916-635-5535.

A data communications software package for use with IBM Personal Computers and Personal System/2s has been announced by **Peregrine Data Systems, Inc.**

The package, called **Pereline**, is said to permit the user to customize functions, create special menus and macro scripts, implement IBM PC-DOS or Microsoft Corp. MS-DOS commands, work with multitasking programs and communicate simultaneously with two other computers.

Terminal emulations provided include ANSI, Digital Equipment Corp. VT100 and VT52, IBM 3101 and Data General Corp. 210/211.

Pereline is priced at $69.95.

Peregrine, 5365 Baron Drive, San Jose, Calif. 95124. 408-356-6105.

Electronic mail

McDonnell Douglas Applied Communications Systems has introduced **Personal Ontyme**, a personal computer interface to its Ontyme electronic messaging system.

Personal Ontyme is said to act as the user interface between an IBM Personal Computer or compatible and Ontyme by offering a main menu of the compose, revise, electronic message system, received, history and quit options. A directory of messages and the messages themselves are stored on the PC, eliminating the need for hard copies of messages.

Continued on page 58

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You can use one to develop new applications. The A Series operating system is one of the most programmer-friendly in the industry, with lots of helpful utilities. Or you can use LINC, one of the powerful 4GLs from Unisys.

You can also use a Smallframe as a departmental computer that shares data with your main mainframe. Either way, it's a perfect complement to your mainframe computing power.

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The newborn A1 in minimum configuration comes with more capacity than its comparably priced playmates can even think about. A 12 megabyte memory that expands to 48. A 125 Mb to 500 Mb in-built disk (external attachments that take you past 7.5 *giga*bytes). Plus virtually unlimited virtual addressing.

All three are friendly little guys, too. Small Computer Standard Interface (SCSI) is built in, so like their larger

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Unisys A Series siblings, the Smallframes talk to all kinds of industry standard peripherals.

There's more to their friendliness than interfaces, too. The machine runs happily in any ordinary office environment, plugged into a standard wall outlet. Newer technology means Smallframes use less power, make less heat and give you improved reliability.

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For about the price of a minicomputer, the A1 can give you proven mainframe-style applications. And if your growth takes you beyond Smallframe capacity, you can be sure that all your hard-won data and fine-tuned operations will still work. No matter how big an A Series computer you end up with.

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Continued from page 55

Single copies of Personal Ontyme cost $95.

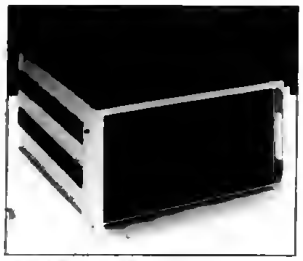
McDonnell Douglas, P.O. Box 49019, 2560 N. First St., San Jose, Calif. 95161. 800-435-8880.

Modems/Multiplexers

A time-division fiber-optic multiplexer, called the **3200MX** and designed to transport medium- and high-speed data in a campus environment with transmission distances of up to 15 km over multimode fiber cable, has been announced by **Quanta Communications Systems, Inc.**

The 3200MX can multiplex up to 32 channels of data ranging from 2,400 to 64K bit/sec. and 72K to 600K bit/sec. per channel. According to the vendor, the total aggregate rate exceeds 33M bit/sec.

Interfaces available include RS-232, RS-422, V.35 and RJ-11 voice. Features include full software control and diagnostics, the vendor said.



Quanta's *3200MX*

Prices range from $4,000 to $9,000.

Quanta, 5415 E. La Palma Ave., Anaheim, Calif. 92807. 714-970-2966.

A multiplexer designed to connect up to four IBM 3299 and compatible coaxial links from an IBM 3274 controller has been announced by **Astrocom Corp.**

The multiplexer, called the **3199**, is part of the vendor's Squeeziplexer product line. It is said to enable data from up to 32 terminals to be transmitted over a single RG62A/U coaxial or fiber-optic cable to a remote terminal Squeeziplexer; the remote unit demultiplexes the signal and sends the data to the appropriate terminal device.

The 3199 can be set up in point-to-point, multidrop or star configurations. Features include illuminated LEDs and an LCD.

A stand-alone model of the 3199 costs $1,250.

Astrocom, 120 W. Plato Blvd., St. Paul, Minn. 55107. 612-227-8651.

The **Anchor** line of modems for personal computers has been introduced by **Anchor Automation, Inc.**

The first products in the line are a 1,200 bit/sec. internal and a 1,200 bit/sec. external model. Both are said to be 100% Hayes Microcomputer Products, Inc.-compatible. The internal model comes with Anchor-Talk software, which can be configured for communication ports 1, 2, 3 and 4.

The internal modem is priced at $149, and the external model costs $189, the vendor said.

Anchor, 20675 Bahama St., Chatsworth, Calif. 91311. 818-998-6100.

Diagnostic equipment

A hand-held high-speed bit-error rate tester called the **Model 76** has been introduced by **International Data Sciences, Inc.**

The Model 76 is a T1, synchronous and asynchronous test set. According to the vendor, it is capable of peforming error analysis at data rates of up to 38.4K bit/sec. asynchronous and 10M bit/sec. synchronous.

The Model 76 is priced at $1,495, plus interfaces.

International Data Sciences, 7 Wellington Road, Lincoln, R.I. 02865. 401-333-6200.

Cabling

An Ethernet-to-Thinwire adapter designed to replace Digital Equipment Corp.'s Desta has been announced by **Micro Technology, Inc.**

The adapter, called **Mesta**, allows connection of a single Ethernet station to Thinwire, a general reference for RG58 coaxial cabling. According to the vendor, it may be used in connection with any standard Ethernet communications controller and is not bus-dependent.

In single quantities, Mesta costs $250.

Micro Technology, 1620 Miraloma Ave., Placentia, Calif. 92670. 714-632-7580.

NEW AT COMDEX/FALL '87

McComb Research is introducing the **Sharenet Connectivity Solution**, a family of network products said to link personal computers, minicomputers, printers, terminals and other devices via 115.2K bit/sec. twisted-pair cable. The network consists of microcontroller-based nodes that link asynchronous serial or Centronics Data Computer Corp. parallel devices to the network. Prices for the different modules range from $79 to $189. McComb, P.O. Drawer 90609, Santa Barbara, Calif. 93190. 805-682-0316.

Biscom, Inc. is offering **Faxcom 2000**, a minicomputer facsimile interface product for sending and receiving facsimiles. It incorporates print server-type functions such as host storage and transfer of received facsimiles, queueing of outbound facsimiles and redirection to a laser printer for facsimile output. It costs $4,995. Biscom, 2 Courthouse Lane, Chelmsford, Mass. 01824. 617-441-0010.

The Complete PC, Inc. is announcing the **Complete Fax** board, an add-in board for Microsoft Corp. MS-DOS-based systems providing Group III facsimile capabilities. It costs $499. Also being announced is **Procam**, a voice-response development system for creating custom voice and telephone applications, and enhancements to the **Complete Answering Machine**, a personal voice-mail system that now supports up to four boards and telephone lines in personal computers and can share a single telephone line with the Complete Fax. It costs $349. The Complete PC, 521 Cottonwood Drive, Milpitas, Calif. 95035. 408-434-0145.

A family of local-area network (LAN) products is being announced by **Acer Technologies Corp.** The line includes the **Acer 1100/20**, an Intel Corp. 80386-based 20-MHz file server; the **Acer 5280 Acerstation**, a diskless workstation; Acer 2,400 bit/sec. modems; Arcnet and Ethernet LAN hardware; and Novell, Inc. software.

The file server costs from $6,695; the workstation costs $1,895 with an Ethernet card and $1,795 with an Arcnet card; an internal modem costs $279; and an external modem costs $329.

Acer also announced a 386-based multiuser system featuring the Microsoft Xenix operating system and running at 20 MHz. A base configuration supporting eight users costs $6,995. Acer, 401 Charcot Ave., San Jose, Calif. 95131. 408-922-0333.

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The first generation of laser printers represented a major step forward in printing capabilities. But that was just the beginning.

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For example, first-generation laser were capable of handling 3,000 pages per month. But with TI OmniLaser™ Printers, you can produce as many as 25,000 pages a month, and at speeds of eight and 15 pages per minute.

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OmniLaser Printers combine advanced electro-photographic technology with the latest semiconductor technology. Text and images are produced with outstanding resolution by addressing over 7.5 million dots on each page. But since each dot [illegible] a separate area of memory, it takes [illegible]

TI's expertise in semiconductor technology allows us to create specialized components to provide laser printer users with increased ease-of-use, reliability and power.

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store and print these documents.

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The printers you need if your needs are demanding.

Our family also includes shared-resource serial-impact printers.

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Our Model 810, for example, has become the standard for heavy-duty system printers. Over the years, they've proved themselves to be so durable, most of the world's largest airlines depend on them for ticket printing.

Then there's our Model 860s, which feature high-throughput, near-letter-quality printing and high-resolution raster graphics for data processing environments. And just about the only maintenance they require is the occasional ribbon change.

Increase operator productivity and eliminate forms waste.

The latest addition to our printer family is the Model 885 demand document printer. Just like the other family members, it's designed to be rugged and offer superior paper handling. But its differences make it ideal for applications where space is limited and paper waste is a consideration.

We've added a zero tear-off capability that eliminates forms waste. Simply put, it uses just one form where most printers would also use a second. It's front-loading, handles up to five-part forms with ease, and thanks to its small footprint, fits on a desk or countertop.

TI's 885 demand document printer includes a zero tear-off capability to eliminate forms waste.

Mini or mainframe, our printers connect to IBM.

Plug in TI's SNA/SDLC coax option and you can connect many of our durable printers to your IBM 3270 system quickly and cost-effectively. In the same way, plug in the TI Twinax option, and you can connect a TI printer to your System 34, 36 or 38.

The personal printers.

Our family of personal printers is well known for its sturdy qualities. We build them to offer industrial-strength and design durability, coupled with convenient features like easily changeable font cartridges.

They feature dual-mode, letter-quality, color and graphics printing, and come in both 80- and 132-column models. And since they're compatible with most PC hardware and software on the market, they can help in virtually any application.

Durability and technology. A combination that's engineered to work for you.

As you can probably tell, there's a broad range of TI printers designed to fill most any need. And as different as they are in function, they have a couple of things in common: durable design and [illegible]

Optional interface boards make TI printers compatible with IBM's 3270 protocol, or with System 34, 36 or 38 minicomputers.

At Texas Instruments, building printers that deliver these qualities isn't just a goal, it's a commitment. We call it putting TI technologies to work on paper. And all you need to do to put it to work for you is call us toll-free at 1-800-527-3500. Call us soon. Because with your input, we can get to work on improving your output.

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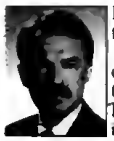


Help me out on this one.

I seem to recall that a long time ago, in a Dick Tracy comic strip, there was a character named Vitamin Plenty. In addition to constantly popping vitamins, Plenty was an entrepreneur of intergalactic proportions. In one strip, I believe he warned, "He who controls magnetism controls the world," or words to that effect.

If you remember the quote, the circumstances or whatever, please drop me a line, care of *Computerworld*. I'd like to find a copy of the original strip and frame it.

Right next to it, I plan to hang a picture of Nikola Tesla.

If I'm right about Plenty's comment, Chester Gould, the strip's creator, had extraordinary visioo — nothing compared with Tesla's but still extraordinary. As you know, 1987 is the year of superconductivity, and that means magnetism.

When University of Houston physicist Paul Chu reported developing a yttrium, barium and copper alloy that lost all electrical resistance at the amazingly toasty temperature of minus 54 degrees Fahrenheit, the race

Continued on page 65

IBM Series/1 to change careers

Takes on role as communications machine with EDX operating system

BY JEAN S. BOZMAN
CW STAFF

IBM has decided to put a cap on the career of the Series/1 as a general-purpose minicomputer. The 11-year-old system, which began life as a controller for IBM refrigeration units, is being refocused as a communications machine, IBM said late last month.

In line with the new objectives, IBM reportedly will not guarantee support for the Series/1's RPS operating system past 1988. Instead, the company wants users to standardize on its EDX operating system, which is optimized for communications applications. IBM began shipping a new version of the EDX system, Version 6.0, earlier this year.

Current users of the RPS system, many of whom are large enterprises, use RPS 7.2 to support business applications. IBM has told users that future enhancements to aid business-oriented Series/1 applications under RPS will be handled through requests for proposals.

The Series/1, managed by IBM's Communication Products Division (CPD) since January 1986, has played many roles since IBM first announced the versatile system in November 1976.

Those roles include communications processor, protocol converter, IBM System/38 front end and factory communications controller.

9370 of its day

In the late 1970s and early 1980s, IBM advertising pushed the machine as a stand-alone processor for the small customer. In many ways, the Series/1 was the 9370 of its day — featuring rack-mounted components, a modular design and the ability to "talk" to many IBM host systems.

As of late 1986, there were 49,000 Series/1 systems installed worldwide, with 28,700 in the U.S., according to International Data Corp., a Framingham, Mass.-based market research firm.

An IBM spokeswoman said IBM is only reaffirming a decision made by customers in the marketplace. Fewer Series/1 machines are being shipped as applications processors, and fewer requests for applications software are being made to IBM.

"Customers are naturally redirecting their applications toward communications," the spokeswoman said.

In its communications role, the Series/1 concentrates termi-

Continued on page 64

Unix key to Nixdorf expansion

BY JAMES CONNOLLY
CW STAFF

WALTHAM, Mass. — Nixdorf Computer Corp. moved to expand its U.S. user base recently with the introduction of a family of Unix-based systems and programming tools including an SQL-compatible relational data base system.

The primary target for the Nixdorf Targon family is Nixdorf's installed base of Nixdorf 8850 users in the data collection and data-entry fields. Other key markets include government, manufacturing automation and banking, according to Nixdorf President Michael H. Anderson.

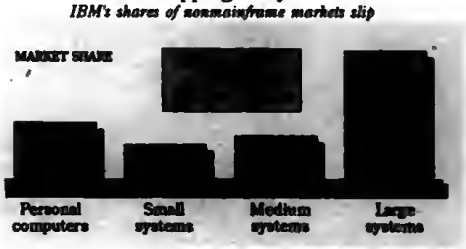
"Where we need Targon is in the high-end market, where data base and standard languages are in demand and where we can open up new markets," Anderson said. He said features such as the Reflex data base system and the Targon DE data-entry sys-

Continued on page 64

Data View

Slipping away

IBM's shares of nonmainframe markets slip



INFORMATION PROVIDED BY INTERNATIONAL DATA CORP.
CW CHART

CCI unfurls supermini

IRVINE, Calif. — Computer Consoles, Inc. recently targeted Wang Laboratories, Inc. Wang 2200 users with a low-end version of Computer Consoles' Power 6/32 series of superminicomputers.

The Power 6/32SE is rated at 3 million instructions per second and is the entry-level machine in

Continued on page 61

Inside

- Icon expands its minicomputer family. Page 60.
- CIE repositions its dual-host terminal against the DEC VT320. Page 61.
- Human Designed Systems offers terminals with workstation-like features. Page 61.

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Icon expands line; minis can run on three operating systems

BY KATHY CHIN LEONG
CW STAFF

OREM, Utah — With plans to seize a sizable chunk of the minicomputer market by running three operating systems on the same processors, Icon International, Inc. and its 65%-owner, Sanyo Business Systems Corp., have expanded their line of departmental computers.

While 3-year-old Icon had shipped its first product — the MPS020-2 — last fall, the same computer has been enhanced and reintroduced as the Sanyo/Icon 2000, priced at $15,000, company officials said.

The other models in the line, the $30,000 Sanyo/Icon 3000 and the $55,000 Sanyo/Icon 4000, are larger versions of the same machine, according to the company.

The 2000 supports up to 16 users, the 3000 supports up to 64 users and the 4000 can link up to 128 users, according to Icon.

Icon President Dennis Fairclough said Icon will win users over to the new computer line with the systems' capability to run Unix, Pick Systems' Pick and Microsoft Corp.'s MS-DOS simultaneously, giving users the option of attaching different operating system devices to the same unit.

Gained one

Prior to the new release, the MPS020-2 had featured the ability to support Pick and MS-DOS.

By offering three operating systems, users can leverage off of the benefits of the other.

While there are numerous applications on MS-DOS, Unix gives users fast multiuser features and Pick has strong communications capabilities, according to Fairclough.

With its Shared Memory Interconnect Local Environment card, the multiuser system is also positioned as a sophisticated file server.

At Orem-based Wordperfect Corp., technical support manager Stan McKay reported that more than 160 users are linked to three of the 2000 models that act as file servers on a Novell, Inc. network supporting Datapoint Corp.'s Arcnet.

Wordperfect purchased the 2000 because of the computer's speed. At Wordperfect, the technical support team stores data bases containing information on customer problems and software bugs.

"When a user calls us up with a problem, we need to access the data base right away to help solve the problem on the phone," McKay said. "The speed on the server is critical."

The system enables a Novell network to run 20% to 30% faster, Fairclough claimed. Its speed is a direct result of the machine's parallel processing architecture, according to Fairclough. The 2000 utilizes the 32-bit Motorola, Inc. 68020 microprocessor.

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TI extends its System 1000 line downward

AUSTIN, Texas — Texas Instruments, Inc. extended its System 1000 family downward recently with the introduction of four entry-level models supporting up to eight users.

The Unix-based systems were designed to be upgraded to TI System 1100 models through a board swap and include a 60M-byte cartridge tape that allows data transport to more powerful System 1000 models.

The four models are the 1005, 1010, 1005M and 1010M. The 1005M and 1010M feature an eight-port multiplexer that supports connection of eight devices, including workstations, terminals and printers.

Use with System V

The systems run TI's System V, which is based on the Santa Cruz Operation's Xenix System V, an operating system that was jointly developed by the Santa Cruz Operation and Microsoft Corp. to comply with AT&T's System V Interface Definition guidelines for source code compatibility with other System 1000 processors.

The basic Models 1005 and 1005M each include 1.15M bytes of memory, a 1.2M-byte floppy disk drive, a 48M-byte hard disk drive, a tape backup, a parallel port, a serial port and a TI Model 924 terminal. The basic Models 1010 and 1010M feature an 87M-byte hard disk drive.

The systems can support up to 227M bytes of hard-disk storage, according to the company.

Base prices range from $7,195 for the Model 1005 to $9,895 for the Model 1010M. An upgrade to a System 1100, which can support up to 16 users, costs $3,995.

CCI unfurls

CONTINUED FROM PAGE 59

the Power 6/32 family, according to John Jacobson, senior vice-president and general manager of Computer Consoles' computer products division.

Jacobson claimed the Power 6/32SE supports 32 users, compared with 16 users supported on the Wang 2200. He said the Computer Consoles system can be ordered with the vendor's Basic-K compiler, which allows Wang 2200 applications to be moved onto Computer Consoles processors.

Like other low-end Power 6/32 models, the Power 6/32SE supports 4M to 16M bytes of memory, up to 337M bytes of formatted-disk storage, a 45M-byte tape drive and an optional nine-track streaming tape drive.

The Power 6/32 family runs Computer Consoles' Officepower integrated office automation system and CCI System V, which is the company's implementation of AT&T's Unix System V, Release 3.

Available now, the Power 6/32SE costs about $70,000 in a basic configuration and is about the size of a two-drawer file cabinet. A configuration with 4M bytes of memory, a disk controller, a 380M-byte disk drive, a tape controller, a 45M-byte tape drive, an operating system and Officepower licenses for 32 users costs $98,900.

Dual-session terminal pitted against VT320

IRVINE, Cal. — CIE Terminals, Inc. recently cut the price and renamed its dual-host, dual-session CIT310 terminal to reposition it against the VT320 ANSI text terminal introduced by Digital Equipment Corp. in August.

CIE, a subsidiary of C. Itoh Electronics, Inc., redesignated the terminal, which was announced in June, as the CIT326.

The single-unit price was cut by $150, from $749 to $595. DEC's VT320, which was announced as a successor to the VT220, carries a base price of $545.

Trade-off with DEC

A CIE official claimed the CIT326 offers a potential VT320 user the option of a more advanced terminal. The CIT326 replaced the single-host CI224 and CIT220+, which C. Itoh has agreed to discontinue in accordance with a recent settlement with DEC.

The CIT326 was designed to provide instant on-line switching between hosts and management of display parameters. It uses two cables for connection to two hosts.

For example, one computer can be connected to a DEC VAX while the other is linked to a dial-up model or a local-area network. In dual-session mode, the screen can be split horizontally with the user able to select the percentage of display devoted to each session.

The terminal stores four pages of screen information and the user is able to allocate memory to either session, according to the vendor.

The CIE326 is available now.

DEC-compatible line has workstation flavor

BY STANLEY GIBSON
CW STAFF

PHILADELPHIA — Human Designed Systems, Inc. (HDS) recently announced a series of terminals, called the HDS3200 Image Leaders, said to be compatible with Digital Equipment Corp. systems.

In addition to DEC compatibility, the displays offer DEC VT330 graphics terminal performance to customers at a lower price than that of a DEC terminal, the vendor claimed. The terminals also contain features not offered on DEC terminals, according to HDS.

The HDS3200 Image Leader series consists of three models, each of which includes integrated text and graphics with DEC's format for graphics sixel and Tektronix, Inc. 4014 graphics emulation; a 15-in. monitor; multiple pages of scrollable text memory; and 38.4K bit/sec. communication speed.

The terminals also offer HDS Windows, which can create up to six windows of any size and display information from several computers or from different applications on the same computer. Users can connect up to three computers at the same time in different windows and pass files from computer to computer through the terminal, HDS said.

The HDS3200 Image Leader Model 10, priced at $699, is the entry-level model and offers text and graphics in a 1,056- by 400-pixel display.

The HDS3200 Image Leader Model 20 offers a higher resolution 1,056- by 800-pixel screen and a 50-line text display mode. It is priced at $999.

The HDS3200 Image Leader Model 30, priced at $1,299, features pan and zoom graphics and allows a user to magnify an image up to 16 times. Up to 512K bytes of memory are available for graphics storage.

Customers may upgrade from one model to another, according to HDS.

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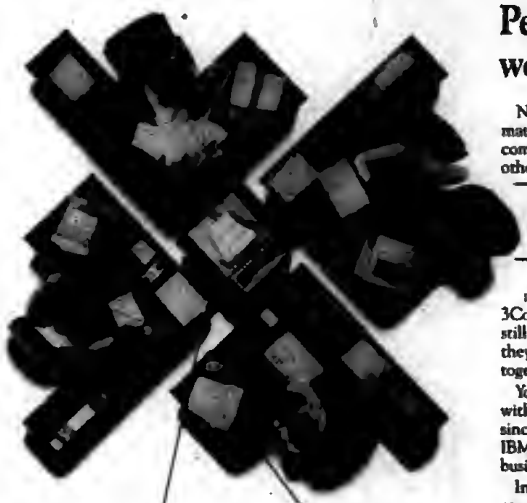

A Tandy 4000 computer with hard disk acts as the file server, providing information to Tandy 3000, 1000 and other PC compatibles functioning as workstations.

Each workstation can run a variety of applications: write memos and letters, send messages, do spreadsheet planning and more.

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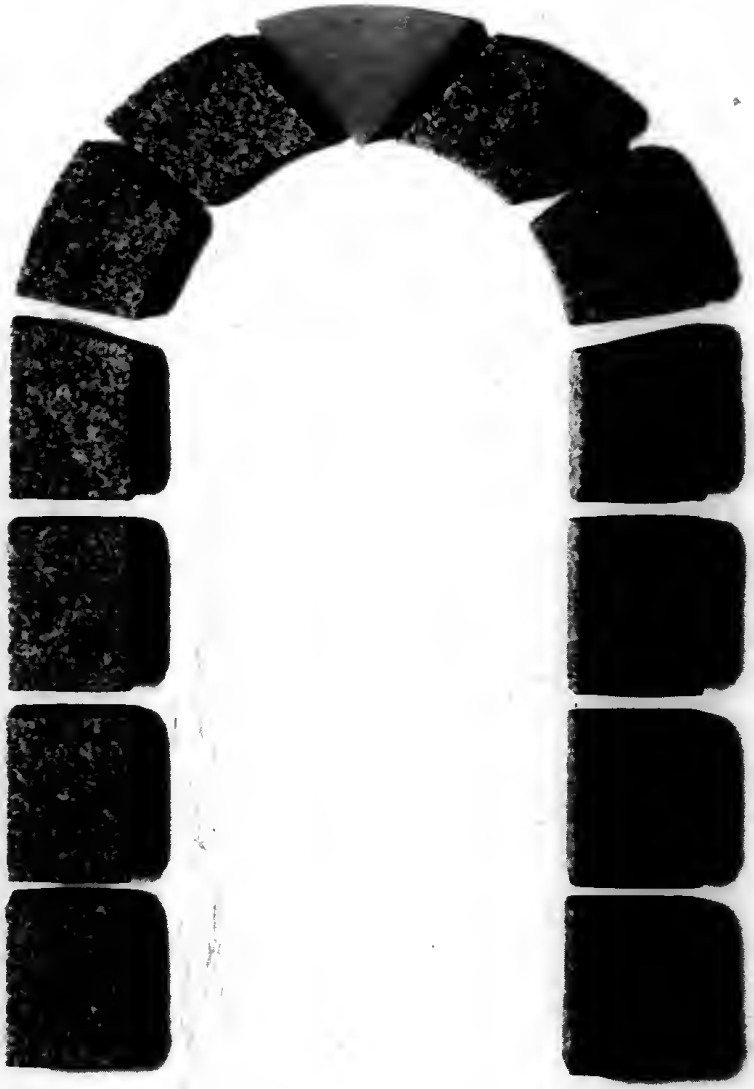

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Each of the Alcatel Business Systems companies also shares in, and benefits from, the massive worldwide resources of the parent company. Resources that include R&D expenditures that exceed $1 billion a year and an ongoing corporate commitment to the American marketplace.

This means that the relationship American business has enjoyed for so many years with the former ITT companies will now be even more productive and profitable. Because every Alcatel company is committed to providing customers with the finest integrated communications and business information solutions available.

With more than 150,000 employees in 110 countries and sales of $13.3 billion, Alcatel is the second largest supplier of public network equipment, mail systems, telecommunications and business information systems and services in the world.

So if the future of your company is of concern to you...remember the keystone.

Because the keystone is Alcatel.

ALCATEL

For more information on Alcatel and the Alcatel Business Systems companies, call 1-800-556-1234 (ext. 247) or in California 1-800-441-2345 (ext. 247); or write Alcatel Business Systems, 2350 Qume Drive, San Jose, CA 95131.

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IBM Series/1

CONTINUED FROM PAGE 59

nal messages to an IBM mainframe.

But users said they are only following IBM's lead. The company is reducing support for educational courses and some products related to Series/1 applications.

Last month, IBM withdrew nine Series/1 educational courses. The company said there was insufficient interest in the courses, including one in RPS generation and maintenance and another in planning Series/1 connectivity.

Silverlake may pick up slack

IBM has told users it will continue to enhance the Series/1 communications function, possibly transferring some of the capability to the so-called Silverlake machine scheduled to be announced in 1988. But the company has not made any commitment to shift Series/1 functions to Silverlake, which is the successor to the System/36 and 38.

Large users, such as Sears Communications Network in Arlington Heights, Ill., said they are not concerned about the move away from Series/1 applications and have seen it coming for two years.

"Nobody told us anything, but there was a belief that the Series/1 would be redirected toward communications when it was transferred to CPD," said Gary Weis, vice-president of data communications and software services at Sears.

Sears Communications Network uses hundreds of Series/1 machines, and Sears, Roebuck and Co. uses hundreds more in its retail store operations, Weis said.

Sears, which uses RPS 7.2, plans to use the system indefinitely. "We have made a very large investment in proprietary applications on Series/1, and we plan to continue to use them in the years to come," Weis said.

As for discontinuance of support for RPS, Weis said, "Even if that were the case, it wouldn't overly concern us. We wrote our own communications software that runs on top of RPS, and we could continue to support RPS ourselves."

Smaller shops, which tend to use the EDX operating system, apparently have less to worry about. Even so, many of them have taken heed of IBM's direction and are converting applications to other machines.

Small shops migrating, too

"I am kept very busy converting Series/1 applications to IBM PC ATs," said George Best, president of Systems Consulting Co. in Cherry Hill, N.J. "You can rewrite the Cobol application and use an [Iomega Corp.] Bernoulli box to hold 10M to 20M bytes of data in a tape cartridge."

Best said he recommends that small businesses adapt to using IBM Personal Computer AT or PC look-alikes as their stand-alone processor. Users can share files by passing around the tape cartridges, thus avoiding expensive local-area network connections between PCs, he said.

Other users are actively evaluating non-IBM machines.

"When you're using the Series/1 as a stand-alone, migrating to a non-IBM machine is just as easy as migrating to another IBM system," said one user who did not wish to be identified.

But others remain wistful at the possibility of losing their dependable Series/1 in the name of higher technology.

"I really don't see any reason to move to another box," another user said. "We have used our Series/1 for five years with only a handful of interruptions in service."

Nixdorf

CONTINUED FROM PAGE 59

tem announced with the Targon processors will help data-entry system users implement additional applications under Unix. He added that the 8850 family will remain available and will be enhanced before the end of the year.

The Targon systems, including the Targon 31 series of supermicrocomputers and the Targon 35 series of superminicomputers, had been available for 18 months in Europe through Nixdorf's parent, Nixdorf Computer AG. Targon processors also had been available on a test-market basis in the Chicago area while software was being developed, including Targon DE, which was designed to support applications running under Nixdorf's DPEX operating system and Editor language on an 8850.

Nixdorf is targeting an 8850 user base of 3,000 customers in the U.S. and 9,000 worldwide.

In differentiating the firm's offerings from other Unix vendors, Nixdorf officials cited the company's flexibility and full service in customizing systems, its development tools, such as Reflex, its use of multiple special-purpose processors within a system and its breadth of products.

The high-end Targon 35/50 models are based on reduced instruction set computing technology provided by Pyramid Technology Corp., while the Targon 31 supermicrocomputers are based on Motorola, Inc. 68010 and 68020 microprocessors.

Nixdorf claimed a performance range of 6.5 million instructions per second (MIPS) for a uniprocessor Targon 35/50 and 11.7 MIPS for a dual processor. The Targon 35/50 supports up to 64M bytes of memory and 191 terminals.

A basic configuration of the single-CPU Targon 35/50 costs $125,000 with 16M bytes of memory, a 545M-byte hard disk drive and a tape drive.

Smart forms: What electronic forms do that desk top publishing can't.

It's the difference between making forms with a computer and using forms on a computer.

Desk top publishing is a very efficient way to produce documents, including forms. It automates the *creation* of forms. But it doesn't really automate forms.

Electronic forms technology does. Electronic forms do everything paper ones do, without paperwork. You can fill them in, route them, distribute copies, approve them, revise them and file them, all on your system.

New technology from Electronic Form Systems actually *combines* your forms and your computer system — and the combination makes both more powerful.

The key: Keep the data and the form separate.

If you fill in a form created with a desk top publishing package, the data that fills the blanks becomes part of the form. With electronic forms, you *see* the form and the data together on the screen and on the printout, but *the system sees them as separate files* that can be manipulated separately.

That separation unleashes impressive power.

How a smart form helps a company work smarter.

Filling out paper forms takes a lot of time. Every process in your company is subject to the speed limit of paper. Electronic forms remove that limit.

The form appears on the computer screen. It looks just like the ones your company uses now. As the user enters information, the form helps fill itself out.

The form can do calculations with the data entered in a given blank and enter the result in another blank. For example, an invoice form can add the sales tax by itself.

The form can automatically pull in data from an existing database. When you put a customer's name on an order form, for example, the form can add the address, phone, account number, billing instructions, whatever you wish. Once on the form, this "imported" data can be modified just like data entered at the keyboard.

When the same information goes on several pages of a form, the legal description of a piece of property in a mortgage document, for example, you enter it only once. The system automatically puts it in all the right places. (A mortgage company went from six sets of documents per person per day to thirty-six.)

Information on one form can trigger the system to pull all the other forms to make up a set. To assemble an insurance policy, for example, the system can key on the state and the insured's age and automatically pull all the proper endorsements.

Desk top publishing can't do anything like this.

How you "teach" your smart form.

To tell the smart form what to do with the data entered in each blank, you create a "form map" with software from Electronic Form Systems. It doesn't require programming skills; it's less complex than a spreadsheet.

You can tell each blank:

- A formula for automatic calculation with that data and where to put the result.
- Other locations where this data should go on the form and other forms.
- What other forms should be included in the set.
- Criteria for valid data: whether it should be letters, numbers, dollars, how many digits, how many decimal places, and so forth.

How the smart form can "teach" the user.

When you tell the smart form what to do, you can also tell the user what to do. You can create individual help windows *for each blank.* When the user gets stuck, a touch of F10 brings up a window with detailed instructions on what the company wants in that blank.

Your forms become the capture point.

Most companies spend money to capture the same information twice: First when someone puts it on a form, and later when someone reads it off the form and enters it into the computer. Electronic forms end this duplication because data entered for the form can be exported to a DOS file for use in all your other applications. Data capture for the form and data capture for the computer are one.

When someone fills out an order form, for example, the sales information could be automatically sent to your inventory application. Travel expenses could be automatically copied from expense reports to a Lotus® spreadsheet in the department head's PC. Billable hours could be sent from individual time sheets into the billing and accounts receivable package.

To tell the system where to send the data, you create an "external data map" with software from Electronic Form Systems. Data can be exported (or imported) in Data Interchange Format, PRN (delimited ASCII), or System Data Format. In addition to Lotus, Electronic Form Systems supports dBase III, communications software and customer-supplied file transfer packages.

A true electronic form will eliminate hidden costs.

The smart form from Electronic Form Systems is more than a better way to make forms. It's a better way to manage information. It lets people work faster. It lets you stop handling the same information twice. And it cuts several other costs associated with paper forms. Some of those costs are visible, but the largest of them are hidden.

Visible cost — Creating forms.

With the Formcoder from Electronic Form Systems, you can create a new electronic form *and be using it* in less than two hours. No typesetting, no artwork, no printing. And it doesn't take a programmer; a good word processing operator can do it.

Visible cost — Inventorying forms.

Your company now leases thousands of square feet to store forms. And money is tied up in forms inventory, probably six figures.

Electronic forms are stored in the

Electronic Form Systems is a division of Computer Language Research, Inc.

Magnetism

CONTINUED FROM PAGE 59

for room-temperature superconductors began in earnest. Reflecting the general euphoria, *Time* magazine headlined this year's May 11 cover story, "Superconductors! The startling breakthrough that could change our world."

Unlimited electrical power; major advances in fusion research; maglevs (high-speed trains that fly on cushions of magnetism); incredibly small, ultrafast computer circuitry; high-energy particle accelerators that promise to unlock the secrets of the universe; vastly improved medical imaging equipment; superconductive quantum interference devices, known as squids, for studying brain waves, making further breakthroughs in fundamental physics . . . these, and hundreds of other applications we cannot even envision, will be a result of the superconductor revolution.

The initial hoopla is dying down in the general and business press, although the excitement about high-temperature superconductors remains in laboratories and among industrial, military and government technologists and planners.

But there are other voices as well.

If anyone can throw cold water on a breakthrough in physics, it's an engineer. Engineers, while welcoming the laboratory advances, point out that it could take years, or even decades, before the many problems inherent in the new materials are solved so that high-temperature superconductors can be used in practical applications.

Among other things, the new materials are unstable and easily revert to their normal state of electrical resistance. Being ceramic, they then function as insulators rather than superconductors. That could come as quite a shock when you're zipping along at 500 miles an hour in your streamlined maglev.

With all the publicity, it might appear that superconductors are a new phenomenon and that a fledgling industry has yet to be born. The fact is, a superconductor industry not only exists but also has been around since 1911, when Dutch physicist Heike Kamerlingh Onnes, assisted by graduate student G. Holst, discovered that the electrical resistance of mercury became zero at 4.2 degrees Kelvin (minus 481 F).

Although Onnes got a Nobel Prize for his efforts, the development of practical applications from his discoveries took several decades. Interest in the phenomenon languished until some intriguing work took place in the 1930s. It was not until World War II, however, that applications using superconductors were seriously considered.

Among the serious applications were the detection of infrared radiation, the construction of heat valves for special refrigeration systems and the manufacture of electrical switching elements for computers — an application that depended on the infinite ratio between the resistance of a metal in its normal and its superconducting state (a condition first described in 1935). This application resulted in a digital switching circuit named a cryotron.

In the beginning in Illinois

In 1957, John Bardeen, Leon Cooper and J. Robert Schrieffer at the University of Illinois made the breakthrough in the theory of low-temperature superconductivity. Their theory, some 46 years in the making, provided a quantitative interpretation of the principles of superconductive phenomena.

A viable theory, plus the discovery that the use of niobium alloy in combination with tin (and later titanium) permitted the development of ultrahigh-field stable superconductors, marked the beginning of today's low-temperature superconductor industry. Engineers began making superconductor wire, ribbons and other materials that could be crafted into products.

Today, the low-temperature superconductor industry is populated by companies such as Oxford Superconducting Technology, a subsidiary of Oxford Instruments Group; Supercon, Inc.; and Intermagnetics General Corp. — all of which make superconducting wire and magnets. Another company, Eriez Magnetics, recently installed the first large superconducting magnet that will be used to extract impurities from clay. Various cryogenics companies are thriving.

An interesting company known as Hypres, Inc. has produced a signal processor, using a supercooled Josephson junction chip, that operates in the picosecond range. IBM is reported to be having second thoughts about its research into Josephson junctions, a multimillion-dollar effort the company abandoned in 1983. The Japanese are hot on the trail.

If the promise and development of high-temperature superconductors follow the pattern of low-temperature superconductor development, it may be a while before our world is turned upside down.

But recalling Vitamin Plenty's admonition, work on high-temperature superconductors should obviously be speeded up, with plenty of funds from the government. At the same time, more emphasis needs to be placed on developing applications from the proven low-temperature superconductors already at hand. The superconductor stakes, both high- and low-temperature, are enormous.

Kirkley, a former editor of *Datamation* magazine, is an industry consultant currently acting as editorial adviser to Patricia Seybold's Office Systems Group. He is based in South Nyack, N.Y.

When the same information goes on several pages, you enter it only once. The system can automatically fill in standard information like a customer's address.

You can pull data in from other files and export data for use with other applications.

You can create help windows for each blank on a form. Then the F10 brings up a window with instructions on what the company wants in that blank.

You can set criteria for any field. The system alerts the user if the wrong type of data is entered — a letter where a number should be, for example.

The form can do calculations. For instance, it can add total costs on a requisition order and automatically place the sum in the proper space below.

To tell the smart form what to do with the data entered in each blank, you create a "form map" with software from Electronic Form Systems. It doesn't require programming skills; it's less complex than a spreadsheet.

computer so most of that money goes right to the bottom line. You can store as many as 5,000 different forms on an IBM® microcomputer and an unlimited number on a mainframe.

One insurance company projects annual savings of $1.8 million in warehousing costs alone.

These savings are significant, but the visible costs of paper forms are only the tip of the iceberg. The hidden costs can be ten, twenty, maybe fifty times greater.

Hidden cost — Using the wrong form.

There's a Murphy's law of forms: If the wrong form *can* be used, it *will* be.

With electronic forms you can control *who* uses a form, *which* form they use, and what they use it for.

You can restrict certain forms to certain people or departments.

Nobody will confuse two forms that look alike. They request a form by name or number and that's the form the computer gives them.

When a form is revised, you simply replace the old one with the new one in the computer.

Hidden cost — The cost of running out.

Right now, several people in your company have run out of a form they need. They're wasting time looking for more. The missing form is also *delaying revenue*, slowing the whole financial pulse of your company.

Electronic forms never run out. Supply always equals demand. One insurance company produces 15,000 policies every night using electronic forms. They are never short a single policy page.

Hidden cost — Forms obsolescence.

Needs change, laws change, and suddenly a lot of your paper forms aren't worth the paper they're printed on. One bank estimates that out-of-date forms were costing them $35,000 per month.

Electronic forms eliminate this waste entirely. When a form goes out of date, you just move it to another computer file and put the new one in its place.

Hidden cost — Forms management and enforcement.

With technology from Electronic Form Systems, the creation, management and processing of every form in your company are brought into a single integrated system. You'll get up-to-the-minute summaries of how many times a form has been used, how long since it was revised, what the current revision looks like, and so forth. Bootleg forms disappear.

Combine the power of forms and computers.

The computer has given business paperless typing, paperless filing, and paperless mailing. No large company could afford to be without them today.

Now the paperless form is here. And Electronic Form Systems offers proven hardware and software that are already working in hundreds of installations. It is the only fully integrated system capable of handling forms creation, forms management, and forms processing. You can implement it as a centralized system based on your IBM mainframe or as a distributed system using IBM microcomputers. You don't have to rewrite your applications software to use it, and it works with several different makes of printer.

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NEW PRODUCTS

Processors

A line of rugged transportable workstations said to comform to Tempest standards has been announced by **BTG, Inc.**

The workstations, called the **RT-300 series**, are based on the Hewlett-Packard Co. 9000 Series 300. The RT-3501 features up to 32M bytes of random-access memory, up to 100M bytes of internal removable Winchester disk storage, a flat-panel display, a 750K-byte floppy disk drive, RS-232C and local-area network interfaces. The system supports HP-UX, HP's Unix-like operating system.

Other configurations offer a choice of 12-, 16-, 17- or 19-in. color monitors with medium or high resolution.

Prices range from $25,000 to $80,000.

BTG, 1945 Old Gallows Road, Vienna, Va. 22180. 703-556-6518.

Terminals

The **NCR 4900** series of three ASCII and ANSI terminals has been announced by **NCR Corp.**

The terminals feature 14-in. flat-screen CRTs, tilt-and-swivel bases, auxiliary ports and a simplified setup mode.

The 4920 replaces the NCR 7930. It features an 80- or 132-col. display and four-speed scrolling. The 4940 emulates conversational ASCII distributor products. It was designed for use with NCR Tower processors.

Prices range from $595 to $995.

NCR also announced the **NCR 5571**, a self-service information and statement terminal that allows financial institution customers to obtain account statements without the assistance of branch personnel. It costs $10,370.

NCR, Dayton, Ohio 45479. 513-445-4169.

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Because it brings you the best of all worlds: stunning output, great economy, and true plug-compatibility. No outboard protocol converters. No extra cabling. No black boxes.

For PC users, the PageWriter Model 1080 offers Diablo 630 and Epson FX-80 emulation. And emulation is selectable from the front panel, eliminating clumsy internal dip-switches.

The PageWriter Model 3080 is right at home in 3270 systems. It connects via standard coaxial cable to any Cluster Controller or a 4331 Display Adapter.

Model 5080, for System 34/36/38, uses standard twin-axial connectors, and emulates the IBM 5219.

Both the 3080 and 5080 PageWriters also have parallel interfaces built in, so they can share their time with PCs, too.

And when it comes to performance, the sky's the limit.

Near typeset-quality text at 8 pages a minute. A staggering 5000 page-per-month duty cycle—2000 pages higher than the so-called industry standard. Plus superb paper handling: 250-sheet input and output trays. With an optional second input hopper, the PageWriter can run through up to 500 pages completely unattended.

And while that kind of performance may seem earth-shattering, the PageWriter's operation is as near-silent as you can get.

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NEW AT COMDEX/FALL '87

Genicom Corp. is adding two members to its 4000 series of shuttle matrix line printers. The **4470**, with print speeds up to 1,200 line/min, and the **4490**, with print speeds to 1,400 line/min, are priced at $11,900 and $16,900, respectively. Standard features include multiple character sets, 17 international character sets, superscript, subscript, underlining, boldface and character expansion. Genicom, Waynesboro, Va. 22980. 703-949-1828.

Kentek Information Systems, Inc. is announcing the **K-4** duplex electronic page printer, which is said to print 24 sides per min at a resolution of 300 dot/in. It features a built-in 32-bit Motorola, Inc. 68000 microprocessor, a 3½-in. floppy disk and 1M byte of random-access memory. Emulations include the Hewlett-Packard Co. Laserjet Plus. Emulation of Adobe Systems, Inc.'s Postscript is optionally available. The K-4 costs about $19,000.

Kentek also announced the K-2+ and K-3 electronic page printers. The K-3 is functionally identical to the K-4 without the duplex function. The K-2+ produces output at a speed of 15 page/min. The K-3 costs about $12,000. The K-2+ costs about $8,000. Kentek, Six Pearl Court, Allendale, N.J. 07401. 201-825-8500.

Link Technologies, Inc. is adding four plug-in performance cartridges to its **MC10** line of terminals designed for ASCII or ANSI environments: a graphics module, priced at $139; a bar-code option, priced at $249; and two communications options, priced at $49 and $59, respectively, for parallel and serial versions. Link, 47339 Warm Springs Blvd., Fremont, Calif. 94539. 415-651-8000.

Ampex Corp. is introducing its **Ampex 270** ASCII terminal, which offers overscanned video technology and word processing features such as proportional spacing, italics, subscript and superscript. It is priced at $569. Ampex, 401 Broadway, Redwood City, Calif. 94063. 415-367-4151.

SPECIAL REPORT

PC SOFTWARE'S BIG THREE

Three's becoming a crowd for the giants of PC software

- Lotus bets the future on 1-2-3
- Is Microsoft in the driver's seat?
- Ashton-Tate's old Dbase magic

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INSIDE

Rating the Big Three
What do customers think of the software market leaders? A *Computerworld* report card turns up some strikingly different opinions.
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Facing the Music
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Debunking the Critics
Even with 1.5 million copies of Dbase installed, a besieged Ashton-Tate still gets no respect.
Page SR27.

Afterglow
A booming mini-industry has sprung up around the Big Three's software applications.
Page SR31.

Cover illustration: Hal Mayforth

Lining up behind three visionaries

If you use a personal computer at work — and some 15 million Americans do — chances are one in four that it is running Lotus's 1-2-3. There's a one in eight possibility that your PC uses Ashton-Tate's Dbase. And the odds that your PC is based on Microsoft's MS-DOS are greater than 90%.

Those incredible figures are what prompted *Computerworld* to devote this special Comdex/Fall '87 supplement to Lotus Development Corp., Ashton-Tate Corp. and Microsoft Corp. — the Big Three of the PC software industry.

It has been barely six years since IBM introduced a squat desktop computer with a single floppy diskette drive, 64K bytes of memory and plans to spread computing to the masses through Sears, Roebuck & Co. stores. Microsoft was a tiny Seattle development shop with a just-acquired operating system and a couple of languages, Dbase ran only on CP/M machines and Mitchell Kapor, a programmer at Personal Software, Inc., hadn't even dreamed of Lotus.

Today, those three companies are Wall Street darlings. Together they control nearly a quarter of the PC software market. More importantly, they are actively determining what products and standards will characterize the desktop and the work group of the future. Software, not hardware, is driving the PC industry.

No time to revel in glory

Although they sit on top of a mushrooming market, Lotus, Ashton-Tate and Microsoft are in no position for complacency. Each is moving aggressively to expand from its traditional areas of strength into new applications. That process increasingly brings them into direct competition with each other. All three are also trying to build shares in the market revving up around the Apple Computer, Inc. Macintosh, and each is wrestling with the problem of just what to do about the next generation of IBM-standard hardware and software.

The next 12 months will be critical to both the Big Three and their customers. The first major desktop operating system since MS-DOS will be released along with a graphical user interface that is a linchpin in IBM's connectivity strategy. IBM's new PS/2 architecture will prove whether it can make its mark in a somewhat skeptical market. Compatible makers will promote their own standards. Apple will demonstrate its long-term potential as an alternative to IBM. Hardware costs will continue to fall. And, as always, a new crop of competitors will emerge to challenge the software industry leaders.

For customers, the impact of the Big Three's dominance is profound. Having already hitched their wagons to the Lotus, Ashton-Tate and Microsoft stars, buyers will be coaxed and cajoled to follow each company in its vision of computing's future. Will it be Lotus and its view of the corporate data center through a PC spreadsheet, Ashton-Tate's notion of personal and shared data bases or Microsoft's vision of mice and graphical interfaces?

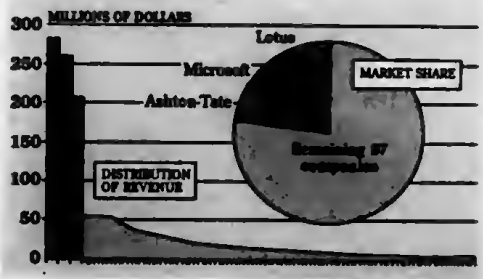
In this Special Report, *Computerworld* tries to supply some answers. Our reporters polled dozens of users and analysts to develop report cards on each of the Big Three in the areas that are most critical to customers. They visited the companies to hatch in-depth profiles. And as a final touch, we gathered the three companies' chief executives together for a provocative interview.

In addition, we present family trees of each company's products showing that their roots, in some cases, run very deep. We also take a look at the budding software aftermarket and the competitors that currently present the greatest challenges to the Big Three's control.

The result is a picture of an industry entering a transitional stage guided by very different philosophies. While Lotus, Ashton-Tate and Microsoft will continue to set the course of PC use for years to come, they will not do so harmoniously. Rather, they will compete for the hearts and minds of corporate users with three distinct messages.

Billions of dollars are riding on the outcome, and customers most think more seriously than ever about which vision of the future they will embrace. ●

PC software market
Together, Lotus, Microsoft and Ashton-Tate laid claim to 23% of the calendar 1986 sales of the top 100 independent microcomputer software companies



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REPORT CARD

TECHNOLOGY

Lotus

B Despite the lavish sales success of products like 1-2-3 and Symphony, users give a surprisingly negative rating to Lotus's product technology. While many say they have grown comfortable with the performance and ease-of-use characteristics of Lotus products, they add that they did so only after an extended period of adjustment.

"I find it difficult to be objective after using Lotus [1-2-3] for a couple of years, but while it seems to be user-friendly now, a new user might not find it that way," says Alan Loebel, a staff consultant with Harris Corp.

Users commonly complain that Lotus has not moved fast enough to upgrade the technology used in its most successful products: 1-2-3 and Symphony.

"I believe in reasonable upgrades, and I don't think Lotus has done that with 1-2-3," says Rick Richardson, MIS director at Arthur Young. "They've upgraded that product only twice in about five years."

Curiously, while users complain about the slow technological evolution of products like 1-2-3 and Symphony, they continue to buy them in impressive volumes. According to analysts, unit sales of 1-2-3 are now more than three million, with sales of Symphony standing at 400,000.

But with the recent introduction of Microsoft's Excel — a spreadsheet several 1-2-3 users say they intend to consider seriously — users think Lotus will be more aggressive in updating its products.

Microsoft

A– While Microsoft is not able to equal Bill Gates' perfect 800 SAT math score, it rates near the top in the area of technology.

Although many users still lament Microsoft's apparent sluggishness in releasing some products, particularly operating systems and extensions, few quibble with the quality of the products once they become available. And the firm gets additional high marks for regularly enhancing its products.

"They have continued to enhance all the items we use," notes James McLaughlin, director of research and development at Bergen Brunswig Corp., which uses Microsoft programming languages and tools along with four different applications.

Another user agrees. "Word is the word processing program we have standardized on, and Microsoft has been coming out with significant revisions about once a year," says John H. Robinson, manager of corporate information systems at Cox Enterprises, Inc.

Some users have publicly railed against the long wait for Microsoft's forthcoming OS/2 operating system and the lack of third-party support for Windows. But others say they feel comfortable with Microsoft in the operating systems driver's seat.

"They have been traditionally late with products, but I feel strongly that Microsoft will last longer than the others," Robinson says.

Most users polled about Microsoft's technology simply say it's better late than never.

Ashton-Tate

C Most users say technology has become Ashton-Tate's neglected child. "They've been bankrupting their technology by running themselves purely as a business," one user says.

Ironically, the product on which Ashton-Tate has built its fortune has become a sore point with many customers. The latest version of Dbase, Dbase III Plus, has been on the market for 22 months with no upgrades. Meanwhile, other companies have burst onto the scene with bigger and better substitutes.

"They've been missing the boat constantly," another user says. "They're essentially a one-product company, and that product, from a technical standpoint, has not been up-to-date."

What appears to be an exodus of top Ashton-Tate software developers, including chief scientist Robert Carr, has also drained many users' confidence in the technical bent of the firm. Although the cadre of Ashton-Tate users doesn't seem to be on the verge of defection, users' patience can only be tried for so long.

If Ashton-Tate wants to hold onto the bulk of its installed base and improve its rating, it will have to stick to its promise of delivering new products and upgrades in a timely manner.

Without a hot Dbase update, more users might be saying, "With Ashton-Tate, all I see is an aging product."

PRODUCT SUPPORT

Lotus

B Lotus's product support is a mixed bag. On the one hand, the company wins praise for its documentation and for training courses from both itself and its dealers. But on the other hand, users say the Lotus telephone hot line leaves them cold.

The documentation on products like 1-2-3 and Symphony is useful as a guide through the first few months of using the products, users say. They also find the quality of the training seminars offered by the company and its dealers to be high.

"They have very good documentation and very good training facilities," says Don Sadowski, a systems analyst with Fireman's Fund Corp. "And the product is available all over the place."

Lotus's major shortcoming appears to be its telephone support.

Several users relate horror stories about calling the company's support lines with pressing problems and getting only a busy signal or being put on hold for a long time.

"Out of the 20 or so times I've tried to reach them, I've never once got through," says Charles Strong, a senior systems analyst with Emhart Corp. in Hartford, Conn.

"In the last six months or so, we've been going to other users. It turns out that it's easier to get answers from other places," Strong says.

Microsoft

B With a product array as large as Microsoft's, support is no easy task. But while users are lukewarm about the quality of Microsoft support, they give the firm good marks for its policy of not charging for it.

Microsoft's support is not free of glitches. The firm received "D"'s from a couple of customers whose questions simply were not answered. "Microsoft has a very complex [support] system, which gets you to the person who can't help you. You call at your own expense, and then they're unable to help you," says Peter Miller, vice-president of the Boston Computer Society.

The firm's attitude is apparently not the problem. "They've been very nice, but they've never helped me with a technical problem," Miller adds.

Even fans of Microsoft's support have run into occasional problems, particularly because of the myriad versions of MS-DOS.

Alan E. Loebel, staff consultant for Harris Corp., had a problem with the Compaq Computer Corp. version of MS-DOS that was not solved in a timely fashion. Loebel says he still does not know for sure whether to blame Compaq or Microsoft. "Word that we got was that it was a Microsoft problem, but they would not send a patch to fix it," Loebel says.

But given the huge number of systems that run MS-DOS and the large number of languages, tools and applications that the firm offers, the level of support is generally good.

And according to Microsoft, there are plans to improve the support system with a data base of support-related information.

Ashton-Tate

B Ashton-Tate's decision one year ago to charge customers for product support was greeted at the time with bitter resentment. The anger does not seem to have subsided, as seen in user interviews.

One user gives the company an "F" for that very reason. "That's a terrible policy," he says. "They owe their customers more than that."

Although all new products come with 90 days of free support, extended service starts at $495 per year for corporate accounts. Support arrangements that include field technicians and more personal service can cost several thousand dollars.

Company officials say the pay-for-support policy was implemented so Ashton-Tate could give support to users who really need it instead of those who tie up hot lines with trivial questions. Although some users disagree with the policy, many say the support they receive is worth the cost.

"I've had to make use of the telephone hot line, or warm line, several times and have had to wait," one user says. "But once I get a hold of somebody, I've received excellent support." The consensus is that Ashton-Tate support is good if you are willing to pay the price.

REPORT CARD

COMPANY MANAGEMENT

Lotus

B+ Lotus's management team gets high marks for entrenching 1-2-3 and Symphony as corporate standards and staving off the challenges of many competitors, both great and small, over the last several years.

"I'm pretty impressed with the people [from management] that I've met recently. They have done a good job in maintaining [1-2-3 and Symphony's] position. People have tried to knock them off but can't seem to touch them," says one MIS manager who did not want to be identified.

Lotus has stumbled on some occasions, particularly two years ago when it attempted to impose an expensive and unwieldy upgrade to Release 2.0 of 1-2-3.

However, users say the company has admitted its mistakes and appears earnest about not repeating them.

There are questions about just how effectively Lotus management will handle the company's next major challenge: diversifying the product line.

"They hit that note [1-2-3] real well, but they haven't proven to me they can hit a different note," says Charles Davies, an executive director of development with General American Life Insurance Co. in St. Louis.

Most users think the toughest test for Lotus's management is still to come as the company gets ready to fight off Microsoft's Excel and establish 1-2-3 in the world of Apple Computer, Inc. Macintosh compatibles, where Microsoft already has a commanding position.

Microsoft

A– Bill Gates is considered a shrewd negotiator, businessman and strategist. But after realizing that the fast-growing firm needed a stronger focus on the business side, Gates recruited Jon Shirley, a former vice-president and 25-year veteran of Tandy Corp.

During his four years with Microsoft, Shirley has been instrumental in engineering a wildly successful initial public offering, a string of acquisitions and a volume of strategic agreements that have put the company's competitors to shame.

The result is an image within the user community of strong and visible leadership.

Microsoft also has a vision of computing that company officials continually harp on: a computer on every desk and in every home, with most sharing a common graphics user interface.

While at times tiring, that stubbornness and resolve is admired by many users.

"I know those people and understand their philosophy. They are the right people to run the company," says James McLaughlin, director of R&D at Bergen Brunswig Corp.

Others are impressed with Microsoft's handling of its many relationships with other vendors. "They have great working relationships with their working partners," says Alan E. Loebel, staff consultant for Harris Corp.

Ashton-Tate

B– Like most companies, Ashton-Tate derives its managerial character from its chief executive. In Edward Esber's case, most users perceive a buttoned-down Harvard MBA who takes a no-nonsense approach to running the company. And that accurately reflects the type of corporate culture for which Ashton-Tate is striving as it makes the difficult transition from a stellar start-up to a stable corporation.

However, some observers say Esber's style suffocates creativity and that many of Ashton-Tate's best minds have left the company for a freer corporate atmosphere.

"I am appalled at the number of people who have left Ashton-Tate," says Michael Goulde, a senior analyst with The Yankee Group in Boston. "They're not so big that they can afford to lose that many people. I have a lot of respect for the people who left, so I have to wonder what it takes to fit in there."

Other respondents are more supportive of Ashton-Tate's corporate approach. "The true sign of company management is financial results and market share," one MIS director says. "As much as I disagree with Ed Esber, he's done a good job for his shareholders." In short, observers express polar feelings on company management: Either they love it, or they hate it.

CUSTOMER RELATIONS

Lotus

C+ As Lotus went through its adolescence two to three years ago, many users claimed the company acted arrogantly and lost touch with the needs of its users.

But during the last year or so, the company's management style has matured, and Lotus is doing a better job of listening to its customers.

Users note that through various and frequent user and dealer councils, the company has done a better job of staying on top of users' concerns and giving them a better idea of what its future plans are.

The one area in which the company hasn't been responsive, however, is copy protection. The majority of users say 1-2-3's protection scheme is the single biggest impediment to using the product.

Copy protection "just makes life miserable for people," says one Lotus user who wished not to be identified. "They are afraid corporate America is going to steal them blind."

While Lotus has announced it will drop copy protection on the next releases of 1-2-3 and Symphony, the gesture is seen by many as being too little too late. Lotus says it will not replace existing copies of 1-2-3 with unprotected versions.

A handful of users complain about the high price of 1-2-3, noting that Lotus hasn't once cut the package's $495 price. But most say they can respect the company's decision not to do so.

"They still charge an awful lot, but, hey, why not if people continue to buy it at those prices?" one user says.

Microsoft

B– Software vendors and large customers will never have a completely satisfactory relationship. A software seller does well simply to minimize the conflict with customers. On that count, Microsoft fares OK but is far from perfect.

"With regards to interfacing with end users, I find them friendly, and they do get back to you," notes James McLaughlin of Bergen Brunswig Corp.

It takes more than a call back and a pleasant voice to please a customer, however. "Sometimes they indicate that you have to solve a problem yourself. And from a technical level, they are not very quick to tell you what is going on and where they are going. They do sit on things," McLaughlin adds.

Cox Enterprises, Inc.'s manager of information systems, John H. Robinson, says listening to customers and incorporating suggestions into products is one of Microsoft's strong suits. "They've been learning constantly from users and using what they learn with their new updates and products," he says.

Some are less content than others, however. In fact, Jeff Erhlich, manager of product technology for General Electric Co., says he isn't impressed with any of the Big Three's customer relations. "They've gotten too big to be affected by individuals. They have their own strategies and don't listen to other ideas," Erhlich says.

Ashton-Tate

B To drive home the point that the customer is king, each Ashton-Tate paycheck is delivered to employees in an envelope bearing the words, "This check courtesy of our customers."

And, indeed, Ashton-Tate customers generally perceive the company as being responsive to their needs. "They've been up to see us a few times, in contrast to Lotus, who's never done that," an MIS professional from Boston says.

"I'm willing to wait for Ashton-Tate upgrades and not jump on another company's bandwagon because they've been good to me," says Warren Winter, systems planner for the corporate purchasing division of Pfizer, Inc. in New York. "They know how to treat their customers properly."

The company makes a point of trying to treat individual end users in the same manner as it treats large corporate clients, says Richard Di Giovanni, vice-president of support, services and information at Ashton-Tate.

But the verdict on Ashton-Tate customer relations isn't unanimous. "I'd give them all a 'D,'" says Jeff Erhlich, manager of product technology for General Electric Co. in Bridgeport, Conn. "They've all gotten too big to be affected by individuals."

REPORT CARD

MARKETING STRATEGY

Lotus

B– While it is clear how Lotus intends to position and sell 1-2-3 and its adjunct products, most users say they don't know how the company intends to market the rest of its product line.

"I don't have a feeling for where they are going. I can only guess. If you don't know where they're going, you have no way to judge if they are going to be any good or not," says one user, echoing the sentiments of many others. "However, I don't doubt that they'll be around a long time."

Users are generally skeptical of Lotus's ability to market products successfully outside of its 1-2-3 and Symphony customer base. Most point to Jazz, the failed product for the Apple Macintosh, as a prime example.

Jazz "fell on its face," says Alan E. Loebel, a staff consultant with Harris Corp. "They haven't demonstrated much other than one tremendous smash product."

A few users say Lotus has already implemented a successful marketing strategy for the majority of its products, but these users are in the minority.

"They're always out there. They've flooded the market with products and are doing a good job with most of them," says Don Brown, assistant vice-president of distributed technologies for Chemical Bank in New York.

Microsoft

A– If users had major complaints about Microsoft's market strategy, the whole industry would be in trouble. As the king of microcomputer standards in operating systems and extensions, as well as a key participant in creating standards for local-area networks, Microsoft's strategy affects nearly every user.

Fortunately, most users back Microsoft in its standard-bearer role. "To set your sail with IBM and get in line with top-of-the-line network folks, you've got to be doing something right," Harris Corp.'s Alan Loebel says. "They are obviously putting thought into what they'll be doing in two years."

A key part of Microsoft's strategy, especially on the applications side, is to offer products that are a bit out of the mainstream. As one user remarks, "They are not a copycat company."

Charles Davies, an executive director in development for General American Life Insurance Co., is more specific. "They're doing really well at picking the features that light up the eyes of the people that use their products," he says.

Ashton-Tate

C Apparently haunted by its failure to introduce new products and upgrades on time, Ashton-Tate is seen by many users as being vulnerable to missing market windows and not meeting needs soon enough. As a result, some observers say the company has lost marketing opportunities.

"They don't seem to have responded to the issues and come out with what is necessary to counter other products," says Alan Loebel, a staff consultant with Harris Corp.

Others voice criticism of the firm's marketing personnel. "Lotus and Microsoft marketing representatives call on me on a regular basis, but I couldn't even tell you if Ashton-Tate has any reps in my city," one user comments.

The same user adds that Ashton-Tate does not seem to go the extra mile to win over its customers. "Lotus and Microsoft have often sent me demonstration packages, and that's how you sometimes get stuck on a particular product. But Ashton-Tate never sent me anything," he says.

Users also blame marketing weaknesses for Ashton-Tate's reputation as a one-product company. The numbers bear out the image, with 63% of the firm's sales coming from Dbase III Plus in fiscal 1987.

Ashton-Tate will have a chance to improve its rating with customers when it markets its new line of software for Apple Computer, Inc.'s Macintosh during the next 18 months.

Michael Obar has his priorities straight. He reads Computerworld first.

As MIS manager for Ares-Serono, Inc., a Boston-based worldwide manufacturer of pharmaceuticals, Michael Obar has many responsibilities. Sometimes more than the hours of one day allow.

That's why he sets priorities.

Because he needs to keep up with computer industry and product news, he looks at the ever-growing collection of publications on his desk and sets priorities. And when Monday's mail arrives, he reaches for *Computerworld* first.

"To get an overall view of what's going on out there, I usually grab *Computerworld* first." *Computerworld* delivers Michael the important and up-to-the-minute news about micros, minis, mainframes and communications. Michael says, "I refer to it several times during the week."

Michael knows that staying on top of what's happening can mean staying on top — period. That's why reading *Computerworld* every week is a priority for him.

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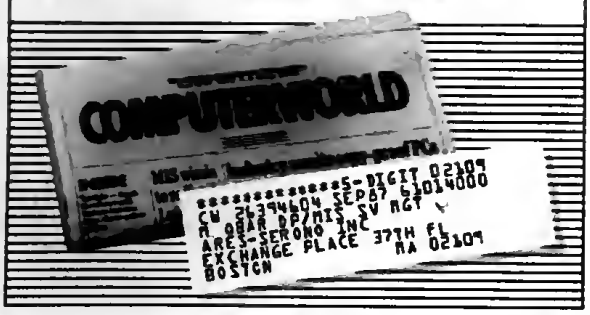

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INTERVIEWS

The great software debate

In an industry with plenty of visionaries but few standard setters, three men are genuinely shaping the future of personal computing. Bill Gates, chairman of Microsoft Corp., Ed Esber, chairman of Ashton-Tate Corp., and Jim Manzi, chairman of Lotus Development Corp., together control the standards for operating systems software and the most critical personal computer applications.

Their domination of the PC market, however, is a delicate balance. These men and their companies rely on an operating systems standard set by Microsoft while also competing fiercely in different applications areas. More fundamentally, the three firms see their own products as the core around which desktop computing trends will form; Ashton-Tate has the data base, Lotus the spreadsheet and Microsoft the graphical user interface.

As personal computer users brace for the changes that will be brought on by yet another generation of hardware and operating systems software, Gates, Manzi and Esber will exert an even greater influence over standards selection. *Computerworld* recently brought together all three business leaders for a roundtable interview moderated by Executive Editor Paul Gillin. Gates and Esber were interviewed at the Agenda '88 conference in San Diego, with Manzi patched in by telephone from New York.

How successful do you think OS/2 will be, and is it what the market is really looking for as a successor to DOS?

ESBER: I think it will ultimately be very successful. OS/2 now is a rallying point for a laggard IBM Personal Computer platform.

BILL GALLERY

Jim Manzi

The software that we're building for things like the Macintosh with its user interface, DEC's product line with its connectivity and OS/2 just allows us to bring some of those technologies to the IBM world.

It's OS/2 that's going to allow us to build more powerful applications that we couldn't build before.

MANZI: I don't know anybody who is screaming for OS/2. End users would really prefer that the whole thing never happened. What they're looking for is some new applications technology. OS/2 is a great product for developers. But it will be a long time and a gradual building process for those applications to come to market.

GATES: I think we're all in agreement. The rate at which people switch will be directly proportional to the number of exciting applications. I feel pretty confident that when you get three years out, over 80% of new office systems will be based on OS/2. But I think the shape of the curve will not be very linear because milestone applications will drive it up dramatically.

In developing applications for OS/2, Microsoft has an advantage because it has the greatest knowledge of the status of OS/2 development. How much of an advantage do you think it is?

MANZI: Microsoft says we hear about operating systems before the internal applications developers at Microsoft do. We take them at face value. The other point is that Bill and Microsoft have controlled the operating system, in some sense, for the last five or six years. So there's fundamentally nothing different.

ESBER: I would agree with that. I think Bill has done everything possible to make it an open standard, and he has exposed the operating systems to us as early as one can reasonably expect him to. Sometimes he points out to me that it's actually a disadvantage that his people see his stuff early because it changes quite a bit, and they might have to recode.

GATES: [That's true.] Looking at what we did on the Macintosh — by not tying up our resources doing systems files and just focusing on application software — we were actually more successful on top of the non-Microsoft operating environment than on our own. I'm not saying that it's a disadvantage, just a case where it helped us not to have to spend our finite resources. If Microsoft has an advantage in anything, it's our commitment to graphics interfaces.

Let's talk about graphics interfaces. Both Ashton-Tate and Lotus have been tentative in their commitment to Windows. Lotus is committed to only one product on Windows, and Ashton-Tate isn't committed yet.

MANZI: We actually have two products: 1-2-3/G, which is really a new spreadsheet product, and Lotus DBMS is a graphical product.

GATES: Let's make a clear distinction here between Windows on top of MS-DOS and Presentation Manager on top of OS/2.

MANZI: We are talking Presentation Manager, not Windows.

ROBERT BURROUGHS/GAMMA LIAISON

Ed Esber

GATES: What's your public posture now on Windows?

MANZI: Our posture is the first graphical applications that we're going to be introducing will be for the Presentation Manager.

What kind of a distinction do you make between the two?

MANZI: They will look the same, but some of the guts will be different. Our customers tell us there's no advantage to having a product out [several]

ROBERT BURROUGHS/GAMMA LIAISON

Bill Gates

months earlier if we're going to have to go through this process of swapping out and upgrading from one interim solution to what we all think is going to be the standard solution.

So one of the biggest things facing large customers is that the pain and suffering associated with the logistical nightmare of swapping out users from our applications is really enormous. And we're on target, as we always have been, to deliver Presentation Manager-based graphics products.

ESBER: We intend to deliver Presentation Manager products first for OS/2. If there's a large gap between IBM OS/2 Version 1 and Version 1.1 and that creates too large a market opportunity, we might have to respond. Our commitment is to the Presentation Manager right now.

MANZI: I question one thing you said, Ed. The days of two, four or six months' advantage are at the margin now. The level of investment of both hardware and software is so enormous that that issue is less important now, just because of the enormity of decisions people are making.

ESBER: So you believe the gap between DOS, OS/2 1.0 and OS/2 1.1 will not be a factor?

MANZI: I don't think it will

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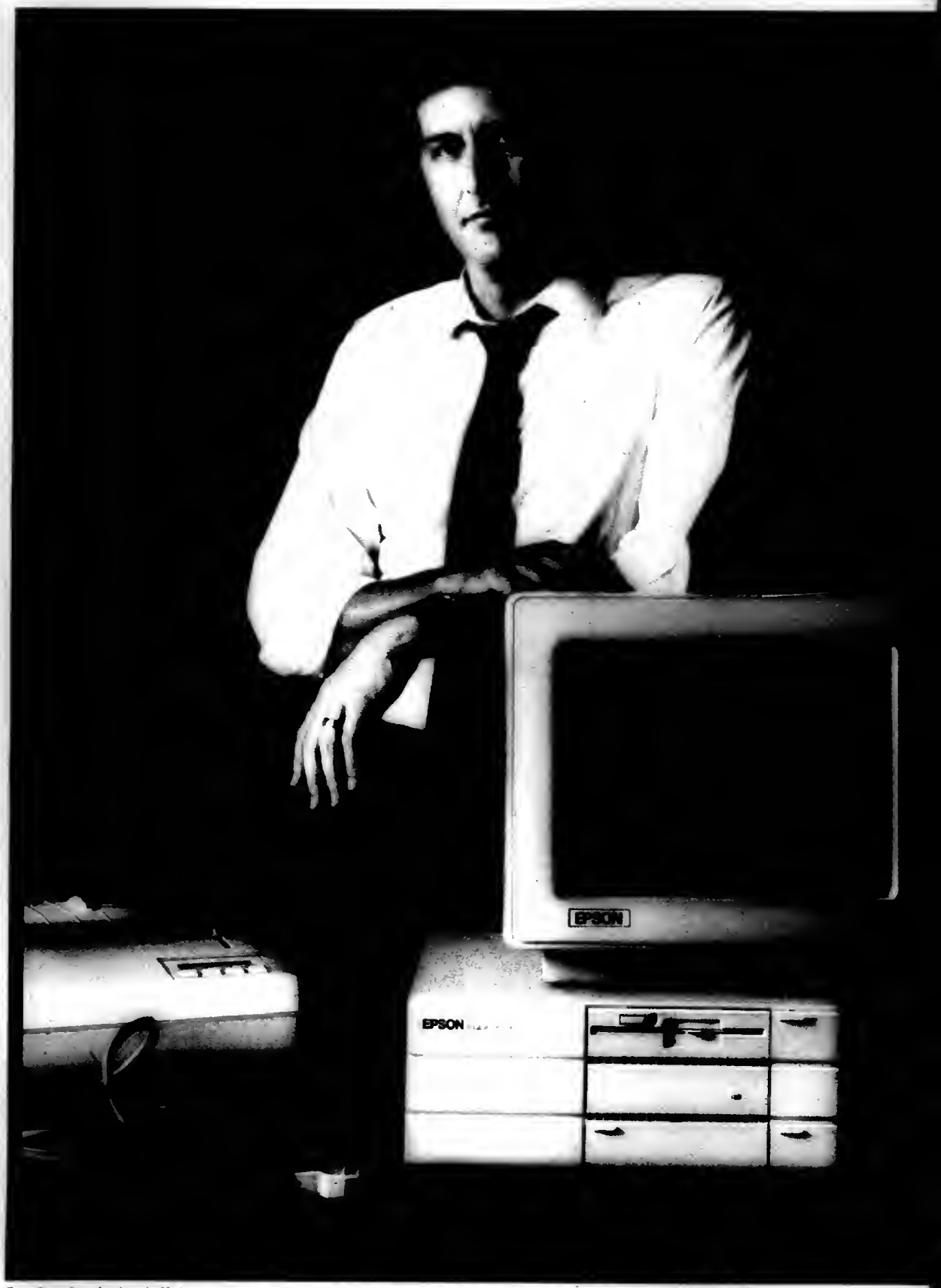

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Great debate

CONTINUED FROM PAGE SR7

be when people that buy up front know that they're going to swap out later on. The transition from DOS to OS/2 is going to be on its own timetable based on the job we all do in terms of providing a transition path and incremental value from one to the other.

What timetable are we talking about at Lotus?

MANZI: We want to be out with 1-2-3 Release 3 as soon as possible after OS/2 is on the market. At the same time, we'll be introducing a version of Release 3 that runs on MS-DOS so that our users can pick and choose.

> "THE TRANSITION from DOS to OS/2 is going to be on its own timetable based on the job we all do in terms of providing a transition path and incremental value."
>
> JIM MANZI
> LOTUS

GATES: One fairly major difference between our strategies is that Microsoft is doing more on top of MS-DOS Windows. We're going to do a lot of applications there first and then upgrade them to the Presentation Manager versions.

Do you think that the move to Presentation Manager from a Windows environment could be a nightmare, as Jim described it?

GATES: The user interface is absolutely identical, and we'll provide very cheap upgrades. I think all of us are talking about people having to make upgrades. Even in Jim's case, I think he's saying that they have to upgrade to Version 3 and then upgrade from Version 3 to [1-2-3/G].

MANZI: Not necessarily.

GATES: You could skip Version 3 and go straight to 1-2-3/G?

MANZI: What I'm saying is people get to choose if they want to run Version 3 in DOS. If they want to run other applications in OS/2, they can run character-based Version 3 just as is. If they're attracted to a graphical interface, we'll be providing a product there as well. What we're saying is we're going to be providing a choice.

GATES: Isn't it true that if I own an [80386-based] machine and I always want the latest and greatest in Lotus, I'd probably upgrade to Version 3 and then later upgrade to 1-2-3/G?

MANZI: No, because Version 3 and

Challengers: Wordperfect

OREM, Utah — With revenue of $90 million to $100 million expected this year, Wordperfect Corp. isn't just another vendor of word processors. It is *the* leader in word processor sales.

And while plans to extend that lead into other office software areas is a goal, Wordperfect seems content for now to stick to its bread-and-butter application, where it has a clear leg up on the Big Three.

"In this case, the Big Three are chasing Wordperfect rather than vice versa," says Bill Higgs, director of software research at Infocorp, based in Cupertino, Calif.

Rave reviews

"Wordperfect has concentrated on performance, and they have had great reviews," says Richard A. Shaffer, editor of the "Technologic Computer Letter," published in New York. "As it turns out, that's all it takes. Good products sometimes win."

Wordperfect has been around since March 1980, when it introduced the original Wordperfect word processor for Data General Corp. minicomputers. The list of machines the software supports has since grown.

Computers that Wordperfect currently supports include the Digital Equipment Corp. VAX, the Apple Computer, Inc. Apple II and Macintosh, the Commodore Business Machines, Inc. Amiga and the Atari Corp. line. The company has also introduced some general-purpose office tools, including the Planperfect family and the Wordperfect Library.

Cozy position

Wordperfect Executive Vice-President Peter Peterson says the company is comfortable in its position below the Big Three.

"We don't want to acquire other companies, we don't want to merge with other companies, and we don't want to go public," he says.

"When you're in an environment where the hardware is mixed, everyone wants software compatibility," Shaffer says. "Everybody knows Wordperfect, and that's a real opportunity for that company to be one of the unifying standards between different platforms."

ALAN J. RYAN

Inside thes
a revolution

Version 4 are in a character mode and will exist side by side with a graphical spreadsheet that we have code-named 1-2-3/G. There's no compulsion on our part to force people to do anything.

A lot of people are going to say, "I'm really happy with a character-based spreadsheet, I'm really happy with my existing suite of applications, and I'm going to take my time if I ever move to a graphical environment." Our position is, we don't want to force people to do anything.

GATES: I don't think anybody here is saying that they want to force people to do things. There is a difference in that we are promoting the idea of moving to a graphics user interface, and you're allowing them to move.

MANZI: I understand that, and that's fundamentally part of your strategy, because you have relatively a much smaller position in the character-based applications world. I'm saying there are a whole lot of people who haven't gotten past the 50% value level in their existing character-based products who don't want to spend the additional money to move. Our view is that mixed computing environments — whether it's DOS and OS/2, character and graphics or [Intel Corp.] 8088s and 80386s — ought to be allowed to exist without penalty.

ESBER: We agree that mixed environments are going to compete, but I think that once a user commits to a graphics environment, he would rapidly want all the applications he uses to be a graphics environment.

MANZI: I agree with you, Ed. Once you make the initial investment, you absolutely will go that way entirely.

ESBER: But we will have to, as an industry, deal not only with multiple machine environments but with multiple versions of our own products.

GATES: We're all in agreement with that. Whether its MS-DOS existing with OS/2 or the various forms of 1-2-3 or Dbase, we're going to have a more complicated situation than where you just assume that the whole base moves to the latest.

MANZI: So why did it have to be so messy, the whole transition process that we're putting the world through?

GATES: Well, it's a long story. We created one standard for personal computing, and that's been a boon to everyone, including our three companies, to have that operating system on 10 million systems. But it comes to the point where its capabilities just aren't enough. I think it's good that we're breaking into basically two levels: the OS/2 level and the MS-DOS level.

With OS/2, we're going to have a much more expensive operating system. How do you expect to price new applications?

GATES: Let me make a point about the price of the operating system. MS-DOS today is $120 and Windows is $99, and our Windows/386 product is $195 on top of the $120. So the prices really

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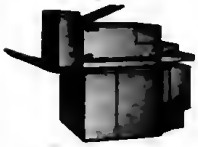
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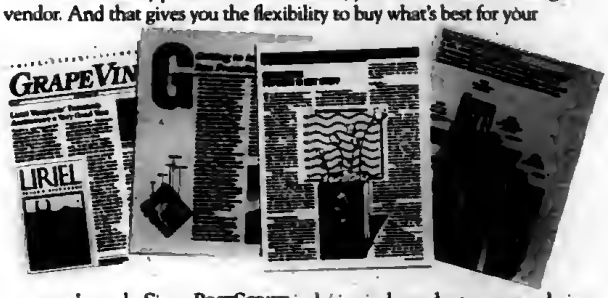

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Challengers: Borland

SCOTTS VALLEY, Calif. — Borland International has knowingly taken the plunge into dangerous waters, introducing products that compete directly against Lotus and Ashton-Tate. But it hasn't drowned yet.

"This is one of the few companies that has the marketing muscle and success record in competing with those companies," says Borland Executive Vice-President Ron Posner.

To win its fight, Borland, founded in 1983 by the flamboyant Philippe Kahn, must also earn credibility in the corporate market that is equivalent to that of the Big Three, Posner adds.

Hard times in corporate market

Whether it can do so is still in question. "Borland has been mainly unsuccessful in the corporate marketplace, except for its Sidekick product," says analyst Clare Fleig of the International Technology Group in Los Altos, Calif.

The company hopes to change the situation with its new Professional Business Series products. They include Quattro, a spreadsheet that emulates Lotus's 1-2-3, and Sprint: The Word Processor, both priced at $195.

Borland also says it hopes to land more high-end business with Paradox, a relational data base management system. At $695, Paradox is a break from Borland's reputation for low-priced microcomputer products.

In addition, Borland continues to thrive in the language market. Its products include Pascal, C, Basic and Prolog compilers and a host of associated tool kits.

Sales and earnings

The company reported sales of $29.2 million and pretax earnings of $4.7 million for the year ended March 31.

Borland's opportunity lies with the business software clone customer, says Richard A. Shaffer, editor of the "Technologic Computer Letter," published in New York.

"People who are buying inexpensive MS-DOS machines for the office will look seriously at work-alike software also, if it comes from a reliable company that looks like it is going to endure," Shaffer says. "Borland has done that."

ALAN J. RYAN

Great debate

FROM PAGE SR11

aren't that much different.

I'd say that in terms of ported applications, those where we just move them across [operating systems], it is our plan to price those the same as the MS-DOS equivalent. And it's only when we get things that are unique to the OS/2 environment that there's an opportunity to do things differently.

A good example of that would be as you get code up on the server, I think those services will require a lot of support. It will tend to be a fairly high-priced category.

MANZI: I don't think there's any particular syllogism that goes something like this: The operating system is more pricey, and the hardware system is more pricey; therefore, the applications should necessarily be more pricey. We look at what everybody looks at: We look at value delivered; we look at competitors.

ESBER: I think there'll be renewed pressure on issues like site licensing, volume purchase agreements, direct relationships not necessarily related to a price increase but to the fact that these things will be networked together.

I think Microsoft, Ashton-Tate and a number of others believe strongly in an OS/2-based server. Those prices will be higher than conventional applications primarily due to the support that is required for software that many users are dependent upon.

I also think some of the pioneering work that Lotus has done in electronic distribution to major corporations can become an issue in a network world of tomorrow.

GATES: I think the best analogue of looking at our prices of server software would be to look at some of the minicomputer-type pricing models. How IBM prices software or how these high-end environments price software defines what the market accepts.

Jim, you stated your intention to get into the data base market, which is now dominated by Ashton-Tate. What makes you think you can crack that market?

MANZI: We announced a product code-named Lotus DBMS that is designed from the ground up for OS/2 and the Presentation Manager and that will tie in to our spreadsheet. We think that the architecture we're developing for both a spreadsheet and a data base to work in a group situation across local-area networks is the wave of the future. We think we have a product that's going to hit a home run in that category.

ESBER: Jim is counting on designing a product from scratch without an installed base and tying in to a very successful product called 1-2-3 vs. my ability, with my 1.5 million user base, to take advantage of the new technology yet not leave my installed base in the lurch. That is a much more difficult task than to design Lotus DBMS from scratch. I view Lotus as a very significant competitor, but I don't see any reason to believe that his installed base is inviolate but mine isn't.

Ed, being part of a company that doesn't yet have a development agreement with IBM, what are the effects on a company of having such an agreement? What advantages does it give them?

ESBER: The importance of an IBM alliance is in the perception of being in the know, being close to the action. Our relationship with IBM is at the level right below that, the level of early disclosures on products and so on.

[An alliance] is an advantage. I wouldn't say it's a vast or insurmountable advantage.

MANZI: Our arrangement with IBM is as we disclosed. It's first and foremost around a product called 1-2-3/M, which we will jointly market, sell and support. It's a terrific agreement for both of us, and I think it's going to be a terrific agreement for customers.

ESBER: I want to add a point. Companies come together for reasons that are win-win situations of mutual benefit. It is clear in the case of Microsoft.

In the area of spreadsheets, IBM has not been a major competitor, and Lotus is the leading spreadsheet vendor, and they came together.

In our case, because we are a strong player in the data base market, which IBM has stated is a strategic area, and one of many competitors in word processing, it was not a potential win-win. Those are the two categories in which I have expertise. I've heard Jim quoted once before saying they'd like to have one [agreement]. You're right, Jim, I'd like to have a relationship too.

What is the market for mainframe spreadsheets?

GATES: Well, I really like personal computers a lot. There's been mainframe spreadsheets around for a lot of time. The [IBM] 3270 terminals aren't that interactive. There are now a lot of standards of spreadsheet data formats, so you can move the data across these mixed environments very easily.

MANZI: We think it's potentially enormous, if you define mainframe as not just 370-class machines but 9370s and departmental processors. We're all biased toward personal computers, but we think there's a need for this kind of common architecture across various hardware platforms.

ESBER: I think that Jim's [Manzi's] relationship [with IBM] is significant in another aspect, in that a spreadsheet is a good way of looking at data.

GATES: Do you support the SAA [IBM's Systems Application Architecture] user interface that 1-2-3 presently does not use?

MANZI: It depends on what point in time. 1-2-3 is not SAA-compatible. Does that mean we're going to collect 2.5 million copies of 1-2-3 and give those people something else? No. Does it mean that we will continue to assess the importance of SAA and will move in that path should our customers want and need that? Of course we will.

GATES: You have no announced intentions to do SAA user interface applications?

MANZI: What do you mean by SAA, Bill? What are you getting at?

GATES: I mean the user interface piece, the standard user interface drop-down dialogue box.

MANZI: 1-2-3/M is going to look, feel, work and consolidate exactly the same way as 1-2-3 Release 3 does.

GATES: But you'll have the same interface as 1-2-3 does today?

MANZI: Exactly. Now, clearly, it's going to work differently because of the round-tripping to the processor, so we're doing some very clever things to make it as interactive as possible.

ESBER: We can assume there will be a 1-2-3/MG then?

MANZI: Well, that's a different story, because of graphics output on a terminal. But to get back to SAA, clearly products like 1-2-3/G are moving in terms of the direction of SAA compatibility.

Increasingly, large software companies are announcing their products well in advance of their delivery dates. Doesn't that tend to freeze the market and prevent competition from smaller companies?

MANZI: Not necessarily. We announced our directions at our annual meeting in April largely because our customers were asking us for some indication of our directions.

So the intent was to be a little bit more forthright and clear, and I think we did that. I don't think it has any impact on the capacity of smaller companies to be successful.

ESBER: I have to take a contradictory stand here. I don't believe that it was necessary to preannounce to the degree the companies have in this business about their OS/2 plans. I think it is very easy to hide behind the veil of "our customers wanted to know."

There is a natural human tendency to want to know what the future is going to be like even before you really need to know. That is not to say that our corporate customers do not have legitimate needs to understand where we're going. But I think that when companies cross the line to announcing specific products that are over a year away, that is negative.

But the tone was set not by software companies, but by IBM. I believe the announcements they made in April were a defensive, competitive response in the guise of an aggressive response.

Your policy, then, is not to preannounce products?

ESBER: No, it was our propensity not to want to go too far into talking about our future direction. I think the competitive environment of announcements from IBM, Lotus and others made it necessary for me to go further than I would have gone on my own. And that's my statement of philosophy about preannouncement. That doesn't mean necessarily that I'm right or wrong, but that's my philosophy on it.

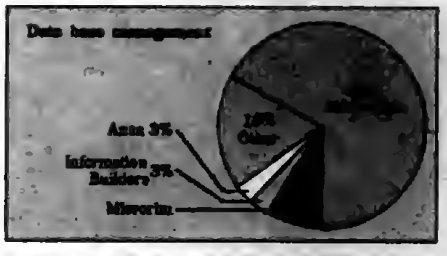
GATES: We tend to distinguish applications from systems software in this regard. We haven't been preannouncing applications much at all.

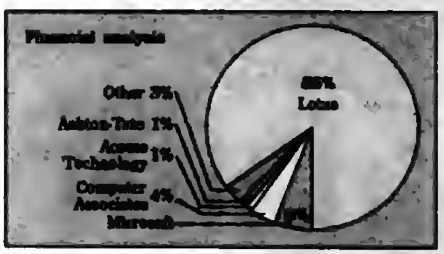
In the case of systems software, I think that you've got to make statements of direction. Now, it's pretty vague what the line between statement and announcement is.

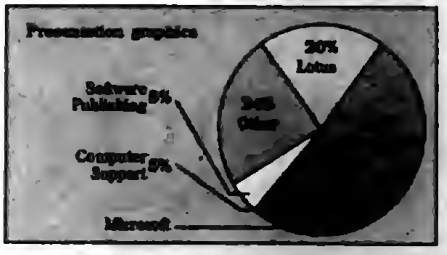
There's 10 million systems out there, and we have to tell people what we're doing with

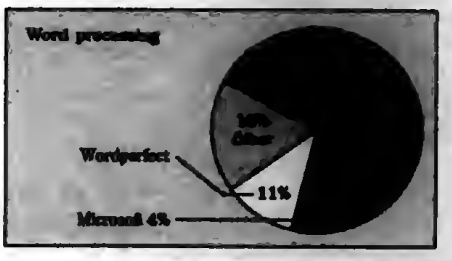
Market share

PC software supplier market share in Fortune 1,000 sites









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CW CHART

DOS. They shouldn't have to pick up and read the latest rumor. We really bring people in and go into it in great detail. And I think there's a healthy atmosphere where we have a complex transition situation, and we're doing our best to get all the information out about that.

MANZI: I can defend what we did on the grounds that, for one thing, some people are talking about a distinction without a difference.

If a product is publicly known, whether it's behind-the-scenes public relations or open announcement at an annual meeting, there's little difference as long as you're communicating direction. We attempted to be fairly forthright about it.

One of the biggest things we ever messed up at Lotus was the transition from Release 1A to Release 2 of 1-2-3. It was late in the year, and a lot of people were in the midst of a budgeting process, and they didn't have the resources to carry through with a commitment to upgrading their user base. What we learned as a corporate lesson was to give relevant advance notice about material changes to our product strategy that would have long-range impacts on our most important customers. I don't think we have any regrets about what we did.

One of the most rumored products recently was Microsoft's Excel for the IBM PC. What impact did the rumors of Excel have on Lotus, and has this damaged your chances with 1-2-3/G?

MANZI: God, no. We've seen no impact on our business. I think we'd all agree business is very strong, given the time of year, and was very strong through the summer. So that's had no impact. It's not an issue now at all.

ESBER: As an independent observer of your two companies, was there any connection between the dropping of copy protection on 1-2-3 and the impending announcement of Excel?

MANZI: No. And we were a little bit upset that the announcement came out when it did. But it was a function of energetic reporters finding out what they could find out. It wasn't a formal announcement.

Take it at face value that we were a little bit upset at the time. There's on leverage in us playing those kinds of games.

Doesn't the domination by your three companies tend to discourage competition from small firms and ultimately limit the kind of innovation that enabled your companies to get started in the first place?

GATES: This is an extremely competitive industry. Companies like Wordperfect and Borland are doing a very fine job.

I think the three of us will continue to have a high market share in horizontal productivity applications. That doesn't mean that there aren't lots of categories and room for small companies. Also, all of us try to create an umbrella to let small companies build on top of our product so they don't have to try and do an entire spreadsheet or something of that nature.

ESBER: Just because there's consolidation doesn't mean competition goes away. I don't think the customers will lose as long as we provide forums for entrepreneurs to add products on top of our products.

As we get bigger and bigger, it becomes more and more difficult for all of us to keep and attract the entrepreneurial spirit.

There's plenty of opportunities for new group-productivity applications. Certainly, our success enables us to be a vehicle for them to realize their wealth.

We've all been somewhat active in buying smaller companies, and I think, quite frankly, the pricing of our acquisitions has gone up.

MANZI: The best analogy is to the oil industry. On the surface, it looks very concentrated. But in fact, that industry is more fragmented than most, given the thousands of independents out there. And the share of market controlled by those big companies is relatively small when you look at it in that perspective. Same thing is true in software. If you talk about an industry that is more than PC software, the three of us look far less foreboding to new entrants.

As far as the pricing of acquisitions, we have been active largely in buying technology that we employ in products. We have bought some companies for their products as well.

Is pricing prohibitive now? I don't know if there's any substantive difference between what it was a year or two ago, except that people are being a bit more focused about it.

ESBER: I wouldn't say the pricing is prohibitive. I would say the absolute dollars that are paid for companies, relative to sales, have gone up.

MANZI: That might be true, driven by mismatched expectations with what's going on in the stock market in terms of incredibly inflated [profit and earnings statements] for some companies and people basing valuations off of that, as opposed to real value.

ESBER: I like Jim's analogy to the oil industry because the reality is, while we may control a large percentage of retail dollars, our employment of software wildcatters — those people at the innovative edge of new applications — is low relative to our actual dollar dominance.

Borland International has come into the market on the rails of low-cost software and is now competing with all of your companies. How much of a threat is Borland, and do you see any inherent flaws in their approach?

GATES: In terms of their applications, I don't expect them to have much impact. They're looking at character-type interfaces, lower levels of functionality, what a [popular] word processor has or what a [popular] spreadsheet has, and putting those out at $195. There hasn't been a big market for that type of thing.

If you want to talk about aggressive prices, there's a lot of free software that isn't so bad, and we've been facing that type of competition for many years.

ESBER: Borland has this populist image, and I think Philippe [Kahn] can sell 50,000 of anything when he announces it at a low price, but the big question is, What's the continuing revenue stream from that?

I don't think his strategy has proven to be successful businesswise — or at least not as successful as Lotus's, Microsoft's or ours in terms of broadening the market and delivering our shareholders a good return.

Only Lotus so far has stated its intent to move outside of the Intel or Apple Computer, Inc. architecture. Why does Lotus see an opportunity there?

MANZI: Look at what kinds of systems are running in companies. It's a bigger and more complex world, and [all of us recognize] that's a big opportunity. We have a clear product that we can put into those other architectures in the form of 1-2-3 and some other things we are doing. I'm sure Ed and Bill are planning their own forays on those platforms as well.

ESBER: I want to correct a statement in your question. As early as the beginning of 1986, we stated clearly our intention to move to the minicomputer and mainframe markets. In fact, we have announced a product in England called Dbase Direct/36 that does have some code that resides on the System/36, and there will be other offerings from Ashton-Tate in a minicomputer and mainframe realm.

GATES: I'm a real believer in PCs. I see the need to do some software on the mini and mainframe that enables networks [to find out] where data is moving around and where resources are. But I really don't believe people sitting on 3270 terminals are going to want big productivity-type applications. I do think these other machines will be a critical part of the network.

We need to make sure there are programs that move that data around, either by working with third parties or ourselves. I would venture that on more that 20% of our sales [will come] from non-PC environments in the foreseeable future.

MANZI: I hope not. We're expecting some significant revenue generation out of products like 1-2-3/M. I agree with Bill that what resides on a PC and what resides elsewhere [will be a fine distinction]. But is that a pure PC product, or a mini or a mainframe product? I agree that major productivity applications running off 3270 terminals are going to be radically different. But nonetheless, we believe that is a big market opportunity for us with 1-2-3/M.

ESBER: We will all do what we need to do on minis and mainframes to make sure that, while most of the work is being done at the PC, we have access to the information that still resides on minis and mainframes.

MANZI: The whole strategy is driven by PC and PC-related technology. We will very hesitatingly do anything that is minicomputer or pure mainframe application. •

> "THE THREE of us will continue to have a high market share in horizontal productivity applications. That doesn't mean there aren't lots of categories and room for small companies."
>
> BILL GATES
> MICROSOFT

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>
> ED ESBER
> ASHTON-TATE

Challengers: IBM

MILFORD, Conn. — Created in a recent corporate reorganization, IBM's Applications Systems Division seems bent on coexistence rather than dominance in the applications world.

The thrust of the 3-month-old division's strategy is to develop its own software, work jointly on development with other vendors and convince other vendors to develop software for IBM, according to IBM spokesman Alan Hodel.

Cooperating rather than fighting appears to be in IBM's best interest, at least in the personal computer applications arena.

As the world's largest software vendor, IBM carries a lot of clout. The company has been overshadowed, however, in virtually every segment of the PC software market.

With the sole exception of the Displaywrite word processor, its PC software, such as the Business Advisor Series, the Personal Decision Series and the Assistant Series, has not turned many heads.

No innovations

"At this point, IBM simply hasn't brought anything unusual or innovative to the party," says Clare Fleig, an analyst at the International Technology Group in Los Altos, Calif.

IBM's new game plan is to have others join the team, partly to gain some software benefits from the personal computer market it created and partly to fend off advances by Apple Computer, Inc.

IBM and Microsoft are working together on OS/2, and Big Blue recently announced a joint marketing and support agreement with Lotus for 1-2-3/M, a mainframe spreadsheet.

IBM has designs on one piece of the applications business, however. It has announced plans to incorporate an SQL data base in a version of OS/2 Extended Edition, its next-generation operating system.

"I think the SQL-based data manager in OS/2 Extended is going to create great problems for Ashton-Tate," says Peter Burris, a software analyst at International Data Corp. in Framingham, Mass.

"Ashton-Tate has to realize that it needs an SQL data manager in its products somehow — if only to prove it has the technical and organizational ability to head into the next generation of multiuser [systems]," Burris says.

ALAN J. RYAN

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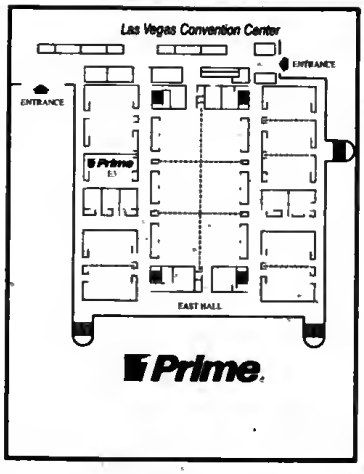

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Balancing on the high wire of Microsoft's success

CHRIS BENNION/GOODMAN LINSON

Setting standards for the future of PC software *are Microsoft President Jon Shirley (left), Vice-President of Systems Software Steven Ballmer (center) and Chairman and CEO Bill Gates.*

BY DOUGLAS BARNEY
CW STAFF

When IBM chose Microsoft's MS-DOS to serve as the basis for the operating system on its original Personal Computer, it gave the Redmond, Wash.-based firm much more than a recurring revenue stream. The 1980 decision paved the way for Microsoft to set standards that not only determine how the bulk of today's machines operate but that may set the pace for microcomputing for years to come.

With an aggressiveness that belies the firm's technocentric image, Microsoft has leveraged that relationship with IBM wisely. It not only spreads its standards across hardware makers and much of the networking industry, but it is also implementing a strategy based upon the forthcoming MS OS/2 that will likely determine the characteristics of the next generation of PC-based workstations.

Even without the revenue of future operating systems, Microsoft, with $350 million in revenue for the last fiscal year, is threatening to surpass Lotus as the No. 1 microcomputer software vendor. And its stock has also risen, from an initial offering price of $19 in 1986 to a recent high of more than $150 per share, adjusting for a stock split.

So far, few are balking at Microsoft's apparent control of future technology. With OS/2 and the Presentation Manager backed by IBM, Microsoft appears to have a firm grip on the next operating system, user interface and development tools for years to come. And IBM permitting, Microsoft could even provide the predominant local-area network operating system for Intel Corp. microprocessor-based PCs.

Microsoft must rely on myriad hardware manufacturers and software developers to ensure the success of OS/2. Satisfying these companies, which often compete with each other and with Microsoft, is no easy task. Microsoft must ensure the confidentiality of its third parties' proprietary information and benefit one company without harming another.

Walking a tightrope

According to Microsoft officials, the firm has the ability to maintain this delicate balancing act and, at the same time, pursue its own interests. "We've had a lot of practice," explains Jon Shirley, president of the $350 million firm. "You can't afford to make enemies in business."

This balancing act is bound to get more difficult as competition among vendors intensifies and Microsoft, currently the largest microcomputer software company, becomes an increasing target of ambitious competitors.

Perhaps the greatest challenge is keeping IBM, with its penchant for proprietary technology, happy with an operating system that its rivals are free to use. Although IBM has sent signals that it is making its microcomputers and operating systems a bit more proprietary, it still remains committed to OS/2 as its core Personal System/2 operating system.

With IBM committed, the rest of the industry appears to be falling in line behind, with hardware vendors pledging support and software vendors preannouncing OS/2 applications. Wall Street also has faith in Microsoft, whose stock has sold for more than 35 times its earnings

Continued on page SR19

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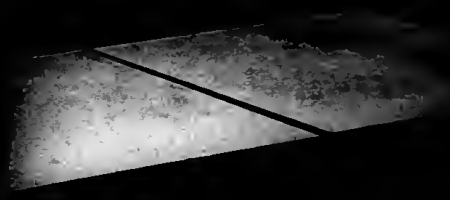

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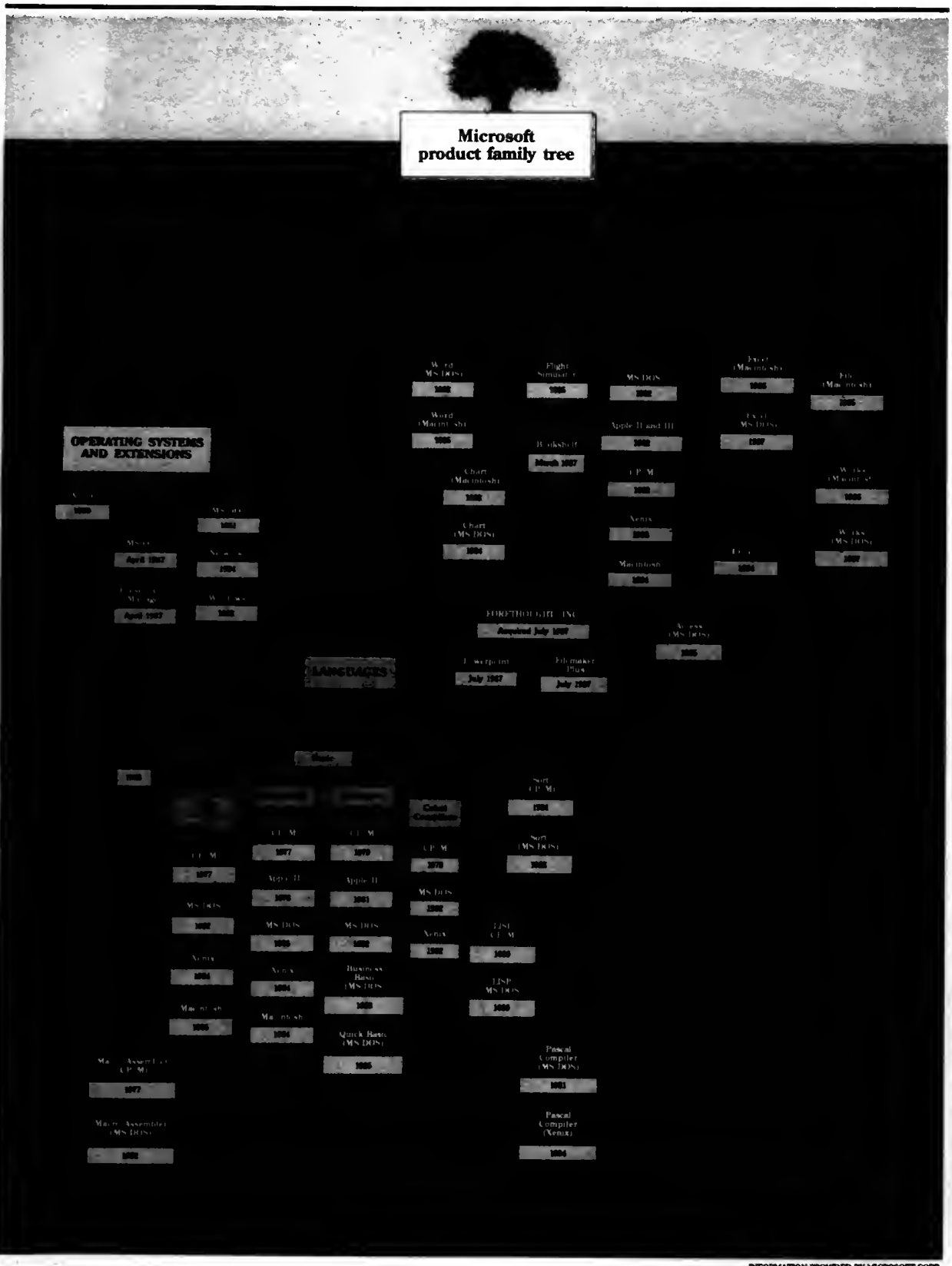

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CW CHART: MITCHELL J. HAYES

All in a day's work

If any company is an extension of its creator, it is Microsoft. The firm's headquarters near Seattle shows the very real influence of Bill Gates, Microsoft cofounder and technical visionary for the last 12 years.

Some Microsoft employees, including key executives, have begun to act, speak and sometimes look a bit like Gates. They may rock in their chairs, as if they were getting ready to go somewhere, or end each sentence by elongating the last word. But the easiest way to spot well-steeped Microsoft employees is to listen to the terms they use. Something off-the-wall is not kooky but "random," and it most often comes from people either "brain-damaged," or with a "narrow bandwidth." This article is "parsed," rather than read, and if it is good, the writer is "golden," or "super good." And instead of applications, the firm develops "apps."

At Microsoft, C is more than a language; it is often a way of life. Even those holding nontechnical jobs at Microsoft pick up languages and detailed knowledge working there. Want to make a phone call or hold a meeting? In most cases, forget it. Use E-mail instead.

A key reason for the well-defined corporate culture at Microsoft is the firm's hiring techniques. Microsoft prefers to have its development talent in Redmond, Wash., under the watchful eyes of management. But Microsoft has tapped Seattle's employment resources to the brink and relies heavily on convincing people to move to Redmond. The company recruits heavily in other parts of the country, and as a result, some 90% of Microsoft developers come from outside the Seattle area, according to Gates. But the primary reason that many employees share certain characteristics is Gates himself. "Bill personifies Microsoft, and hotshots want to work for him," says Richard A. Shaffer, editor and publisher of "Technologic Computer Letter."

Chances are if you work at Microsoft, you will eventually be affected by Gates directly. According to a recent speech, Gates personally chooses what micros his employees use.

DOUGLAS BARNEY

Microsoft

FROM PAGE SR15

at points throughout this past year.

But it is users who will have to live with both OS/2 and the Presentation Manager. And while some have grumbled about the wait, many feel comfortable with Microsoft in the driver's seat.

"A guy like Gates has the personality and character that can attract the kind of people to make software work the right way," said Vahe Katros, MIS PC coordinator for Wm. Filene's Sons Co.

Although many users are fed up with the wait for OS/2, only a few have turned to alternative large memory operating systems.

Forging ahead

Microsoft's goal is to maintain its central industry role by continuing to enhance both the Unix and MS-DOS operating systems, providing development tools and languages for those environments and, at the same time, forging ahead with its aggressive push into applications.

Even if IBM were to drop its support of Microsoft's operating system, the inertia of the clone market would likely provide a healthy and continually growing market. And at three times the price of MS-DOS, the success of OS/2 could only augment the fabulous wealth of its billionaire backer, Bill Gates.

If OS/2 fails, there is still Unix. Microsoft, whose Xenix is arguably the most popular version of Unix on the market, has an agreement with IBM rival AT&T under which the firms will co-develop a standard Unix for Intel 80386-based machines.

Few see a risk to Microsoft's stranglehold on operating systems. In fact, Richard A. Shaffer, publisher and editor of "Technologic Computer Letter," says that nearly every major computer system will have 80386 capabilities, either as a host or co-processor. If this happens, OS/2 will become the widespread operating system that was once the promise of Unix.

Ironically, Microsoft is competing against itself in the operating systems market. Besides offering Xenix, Microsoft has announced Windows 386, which, when combined with the Lotus/Intel/Microsoft Expanded Memory Specification, serves as a large-memory, multitasking environment somewhat similar to OS/2. Of course, either way users turn, Microsoft wins.

Microsoft revenue

INFORMATION PROVIDED BY MICROSOFT CORP.
CW CHART

An important sidelight of Microsoft's operating systems control is that it gives the company a grounding from which to move heavily into applications.

Shaffer says Microsoft has clear advantages in developing applications by virtue of controlling the operating system and extensions such as Windows.

While not "illegal," Shaffer likens Microsoft's position to a baseball game in which "Microsoft owns all the bats and the field."

No unfair advantage

While some smaller software vendors continue to grumble, both Lotus and Ashton-Tate officials have dismissed the notion of an unfair advantage for Microsoft. And Microsoft officials point out that the firm's most popular applications are for Apple Computer, Inc.'s Macintosh. Microsoft has had little to do with developing the Macintosh operating system.

Apart from the potential technical advantages of controlling the operating system, there are clear economic and strategic advantages. "They have fabulous margins on the operating system and can invest in other products," notes Larry Ellison, chairman of Oracle Corp.

Many of the payoffs for Microsoft have come from simply waiting for trends to develop. Microsoft Windows, which Gates has pushed almost fanatically for years, got a major boost in April with IBM's backing of the Windows-based Presentation Manager. However, a solid endorsement of Windows from Lotus and Ashton-Tate is still lacking.

Microsoft was also patient while it created Excel for the IBM Personal Computer, first discussed publicly shortly after the release of Excel for the Macintosh in 1985 and existing only as vaporware until its announcement last month.

Excel for the IBM PC may be a serious competitor to Lotus's 1-2-3 for a long time to come.

What some call patience, however, others call overcommitment. Microsoft has gained a reputation of being slow in developing products such as Windows, OS/2 and Excel for the IBM PC.

Despite that image, Microsoft has an extraordinary array of products and has recently been highly active in releasing products.

Trying too hard?

"The traditional thing that people look at is are we trying to do too much stuff? That is a legitimate thing to look at. I think we are doing a lot better in terms of doing a lot of things and getting them done," says Steve Ballmer, vice-president of systems software. "This fall really proves that. When has a micro software company gotten so much shipped in this kind of a period?"

Ballmer's boss agrees. "We have a very productive software factory," Gates says.

Microsoft intends to remain a leader in the micro business by focusing on future user interfaces, perhaps incorporating natural language technology, and helping define the market for "work group productivity applications," company President Shirley says.

Although few details are available, Microsoft also intends to move its standards to non-PC architectures, but it will let others do the work, Shirley says.

Despite the radical changes in single software markets, Microsoft remains indispensable.

So if in a few years users find themselves in front of an Intel microprocessor-based PC, with a mouse in hand, staring at a graphical user interface on a high-resolution monitor, they can just blame Microsoft. •

Challengers: Computer Associates, Claris Corp.

COMPUTER ASSOCIATES INTERNATIONAL, INC.

GARDEN CITY, N.Y. — It is the largest independent software company in the world, but Computer Associates International, Inc. has spread its expertise over a wide area, leaving it a relatively small player in the microcomputer software arena.

For 1986, the 10-year-old company recorded sales of $265 million and income in excess of $30 million. However, "Computer Associates is relatively small potatoes in the micro systems group," says Bill Higgs, director of software research at Cupertino, Calif.-based Infocorp.

One industry watcher who requested anonymity says that in the micro arena, Computer Associates brings in roughly $60 million to $70 million annually. "It's a lot less than you'd expect when you roll out all the things they've got," he says.

Computer Associates vied for early market leadership with popular products like Supercalc and Easywriter. However, observers say the company never moved aggressively enough in the retail channel and lost the advantage of an early start to more agile young competitors.

Nevertheless, Computer Associates has nicely integrated its far-flung Micro Products Division into the corporate structure and appears to be in the market for the long term. The company has done well in the market for PC-based accounting and project management and is building stronger ties to its mainframe products. Computer Associates also conceived a fairly successful site-licensing plan and was early into the market for applications on local-area networks.

ALAN J. RYAN

CLARIS CORP.

CUPERTINO, Calif. — Apple Computer, Inc.'s newly created Claris Corp. subsidiary is the wild card in the applications software deck.

With five packages totaling about $50 million in revenue under its wing and Apple's considerable resources behind it, Claris is a formidable player. What remains a mystery is where the firm will choose to strike.

Apple created Claris last spring and plans to spin off the software subsidiary within 18 months, according to Claris officials. Although the company has only targeted the Apple Macintosh market so far, officials have refused to rule out potential forays into other arenas.

Managing the relationship with Apple is among Claris's more challenging tasks. Apple has attempted to reassure its third-party software developers that Claris-labeled software is far less threatening to them than packages bearing the Apple brand name.

But Apple's soothing words have not silenced grumbles from its third-party community. "It's a sticky problem," says Jeffrey Tarter, publisher of "Softletter," a Cambridge, Mass.-based newsletter. "If [Lotus's] Mitch Kapor had walked into your office years ago and talked to you about an integrated work sheet, how could you forget it? In some cases, Claris has tried to buy the package and even the company. But software developers are entrepreneurs, and they don't want to become a part of Apple, and they don't want to sell their product to Claris."

But its ties to Apple will also be key to Claris's success. Claris will have access to Apple's distribution channels and resources for product development, acquisitions and marketing. The company starts out with sales from five existing Apple software packages.

JULIE PITTA

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HEWLETT PACKARD

Lotus's hopes bound to spreadsheet juggernaut

ED BALTSKY/GORDON LARSON

Lotus Chairman Jim Manzi *says he believes 1-2-3 has as good a chance as any of becoming in industry-standard interface.*

BY ED SCANNELL
CW STAFF

Lotus has always prided itself on the diverse background of its employees. The company encompasses an assortment of psychologists, transcendental meditators and even jugglers in its management team and has turned an avocation in microcomputers into a vocation.

"Juggling has become so popular that we issued juggling balls to the entire department," says David Gilmour, general manager of the Lotus Advanced Products Group. "People sometimes stand in the halls juggling with each other and talking about systems architecture."

With such a diverse group, it is a bit ironic that Lotus hasn't successfully diversified its product line beyond its 1-2-3 and Symphony offerings. The company has announced or acquired nearly a dozen products for the IBM-compatible market over the last two years, but none accounts for more than a few percentage points of the company's yearly revenue.

Its only entry in the Apple Computer, Inc.-compatible market, Jazz, was a dismal failure. And the company is almost a year late in delivering its first networking package.

Lotus's mediocre success outside its core markets hasn't hurt it too much so far. While the company may lose its No. 1 revenue ranking to Microsoft this year, its revenue is expected to grow 29% in 1987 to $365 million. The 1-2-3 juggernaut still controls 70% of the integrated spreadsheet market, and the often maligned Symphony, which has sold 450,000 copies, is still a consistent seller.

But even now, Lotus is hearing the first thuds against the doors of its 1-2-3 fortress. Just last month, archrival Microsoft showed off its flashy graphics-oriented spreadsheet Excel, a product some analysts say may chip away 5% to 10% of Lotus's installed base over the next year. With three million Lotus users, that represents a significant number of dollars.

A second competitor, Quattro, just released by the aggressive Borland International, also figures to give 1-2-3 some trouble.

Goal to set standard

Lotus's reaction to all of this is to turn to where its strength lies. The company's strategy is to establish 1-2-3 as the spreadsheet standard across the computing universe. The company has already announced future versions of 1-2-3 for IBM's mainframes and Apple's Macintosh, and it is reportedly working on a version for Digital Equipment Corp.'s VAX series of minicomputers.

Steering this effort is 35-year-old Lotus Chairman Jim Manzi. Manzi, a former reporter and a Greek and Latin scholar, is something of a paradox. While he possesses a quick wit, he is perceived as a bit too stiff for some people's taste. Most agree, however, that he is a tough negotiator and shrewd businessman — something Lotus will need in creating the alliances that will embed 1-2-3 in other hardware environments.

Manzi says he believes Lotus will succeed in these brave new hardware worlds because it thoroughly understands that most costs of corporate computing, in any hardware environment, involve training and support. To reduce the cost, many compa-

Continued on page SR26

The C-815 Supra 24-pin printer

My life in the fast lane

I used to spend a lot of my time waiting for our old printer to finish cranking out the paperwork for our busy corporation.

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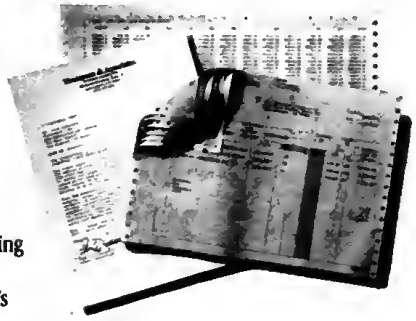

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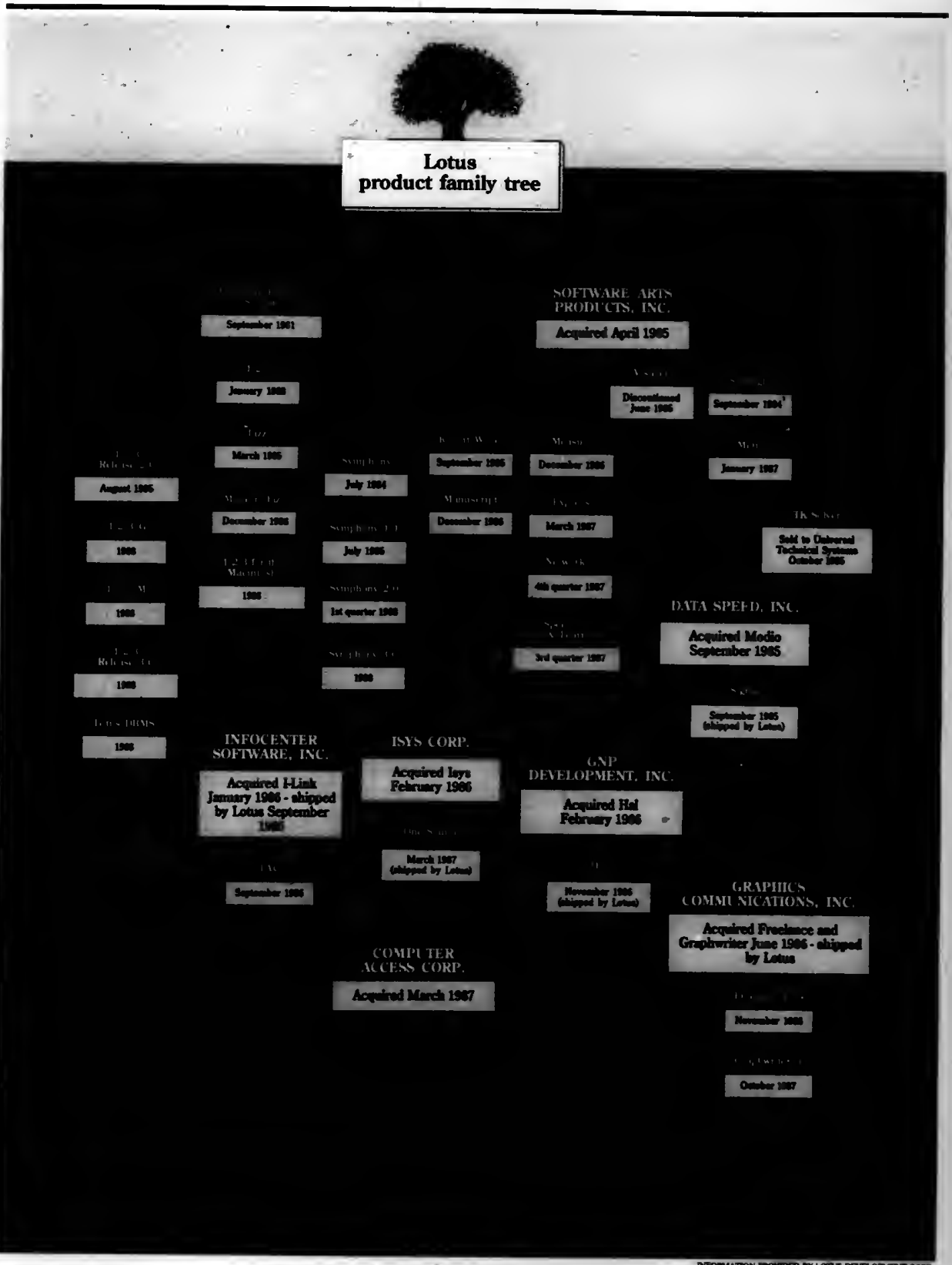


INFORMATION PROVIDED BY LOTUS DEVELOPMENT CORP.
CW CHART: MITCHELL J. HAYES

Lotus's hopes

CONTINUED FROM PAGE SR23

nies want common products and interfaces to run on everything from mainframes to micros.

With advanced technology blurring the lines between different classes of processors, and with 1-2-3 already the standard on Intel Corp. 80286-based microcomputers, Manzi says his product has as good a chance as any of becoming an industry-standard interface.

Tying it all together

From there, the company's strategy is to build a family of applications, each with a unique tie into 1-2-3. The spreadsheet is a hook, they say, into other major application markets such as word processing, data base management, graphics and communications.

Most analysts think Lotus's strategy with 1-2-3 is the correct one, even if it does further entrench the firm as a one-product company.

"Their strategy all along has been to make 1-2-3 the heartbeat of America," says Ruthann Quindlen, a software analyst with investment house Alex Brown & Sons, Inc. in Baltimore. "It manifests their recognition that connectivity is the major problem in corporations."

"They have to maximize their revenues. The trick is to come up with some other products [besides 1-2-3]," says Rick Sherlund, an analyst with Goldman, Sachs & Co., a financial investment firm based in New York.

The first battle in this war figures to be fought on the 80386 platform when 1-2-3 Release 3.0 meets Microsoft's Excel for the IBM Personal Computer.

Characteristically cool, Manzi is unshaken by the graphics-based Excel's potential. "The only thing graphics in a spreadsheet will offer you is $1,200 more in [hardware] cost," he says.

> "THEIR STRATEGY all along has been to make 1-2-3 the heartbeat of America. It manifests their recognition that connectivity is the major problem in corporations."
>
> RUTHANN QUINDLEN
> ALEX BROWN & SONS, INC.

As smart businessmen, both Manzi and Ed Belove, Lotus's corporate vice-president for research, aren't underestimating Excel's graphical appeal. They have explored what advantages graphics can offer spreadsheet users and will incorporate them appropriately into future versions of 1-2-3.

"We are fairly agnostic on the subject," Manzi says, referring to the issue of character- vs. graphics-based interfaces. "A whole piece of our strategy is to make it easy to manage the transition between the two so there are no hiccups in that environment."

The second challenge should come early next year when Lotus releases 1-2-3/M for IBM 370-compatible mainframes.

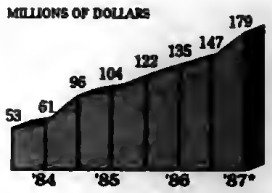
Manzi says 1-2-3/M will succeed not only on its technical abilities but also because Lotus has already established contacts in large corporate MIS and DP departments that make purchasing decisions on such products.

In a survey of 200 MIS managers conducted by International Data Corp. for Goldman Sachs, about half the respondents said they had a need for 1-2-3/M. "I think, potentially, it is a very big market for them. It's a smart move," Goldman Sachs' Sherlund says.

A few MIS managers, however, don't see the potential. "I don't see how they make out selling one copy to everyone with an IBM mainframe," an MIS director with a Fortune 100 company says.

The third challenge for Lotus will come in late 1988, when the company delivers 1-2-3 for the Macintosh.

Lotus revenue
Six-month figures



*Fiscal year ends Dec. 31

INFORMATION PROVIDED BY LOTUS DEVELOPMENT CORP.
CW CHART

Analysts generally think Lotus faces an uphill climb against Microsoft, which has established a commanding lead in the Macintosh applications market.

Lotus thinks it can establish a beachhead there by implementing an effective networking strategy.

In two years, it will be commonplace for IBM- and Macintosh-compatible computers to share the same network, according to Chuck Digate, who oversees all of Lotus's software product development and marketing.

Digate says Lotus is devising a plan that will make it a serious competitor in a mixed hardware environment.

Ticklish relationship

This growing competition between Lotus and Microsoft in the applications market highlights the ticklish relationship between the two.

Lotus and Microsoft must cooperate with each other out of mutual need on operating system matters, but they will soon be trying to clobber each other in the spreadsheet market.

Characterizing his firm's relationship with Microsoft, Manzi coyly says, "It is, ah, interesting."

As will he Lotus's efforts to diversify. But perhaps with some late-night juggling, Lotus will find its answers. ■

Lotus's first fruit not 1-2-3

While most people assume 1-2-3 was Lotus's first product, that distinction actually belongs to a presentation graphics package for the Apple Computer, Inc. Apple II called the Executive Briefing System. The program was co-developed by Lotus founder Mitch Kapor and longtime associate Todd Agulnick.

Kapor and Agulnick designed the program in 1981, when Kapor was president of the Cambridge, Mass.-based Micro Finance Systems, Inc. But by the time the first copy shipped, Kapor had changed the company's name to Lotus Development Corp.

The program was intended as a complement to Visiplot and Visitrend, two plotting and graphics packages for the Apple II that represented Kapor's first commercial successes. Kapor sold the programs for $1.2 million to Personal Software, Inc., which later changed its name to Visicorp.

"Technically speaking, you can call [Executive Briefing System] the first Lotus product," says Agulnick, who was in his teens when he wrote the program. "It perhaps borrowed some of the look and feel of Visiplot. It was supposed to take a graph or plot and organize it into a presentation."

A few months after Executive Briefing System shipped, Kapor decided to drop it to put more resources behind a second product he was developing, which was later named 1-2-3. No one connected with the program knows how many copies of Executive Briefing were sold. One source, however, says the product recorded enough sales to be listed as an asset in public documents listing details of Lotus's second round of venture capital funding.

Ron Goldfarb, manager of office automation for the administrative division of Pratt & Whitney, a United Technologies Corp. subsidiary in Hartford, Conn., claims he bought the first copy of Executive Briefing System. Goldfarb was preparing some graphs for his boss, but with Visiplot, he couldn't add text. So he called Kapor to ask if he knew of any package that could help him out. Kapor told him Visiplot wouldn't help him much but that he had a package coming out soon that could.

"Mitch told me there was only one salable copy, and it was in [Computer City, a retail store in] West Hartford," Goldfarb says. "Since I was in East Hartford, I went right over to pick it up."

Goldfarb still has the original copy (serial number 100171; the first 170 were beta copies) and tried to give it back to Lotus officials during Lotus Week this past April. Much to his disappointment, however, everyone he spoke to was either disinterested or had no knowledge of the product.

ED SCANNELL

Michael Obar has his priorities straight.
He reads Computerworld first.

As MIS manager for Ares-Serono, Inc., a Boston-based worldwide manufacturer of pharmaceuticals, Michael Obar has many responsibilities. Sometimes more than the hours of one day allow.

That's why he sets priorities.

Because he needs to keep up with computer industry and product news, he looks at the ever-growing collection of publications on his desk and sets priorities. And when Monday's mail arrives, he reaches for *Computerworld* first.

"To get an overall view of what's going on out there, I usually grab *Computerworld* first." *Computerworld* delivers Michael the important and up-to-the-minute news about micros, minis, mainframes and communications. Michael says, "I refer to it several times during the week."

Michael knows that staying on top of what's happening can mean staying on top — period. That's why reading *Computerworld* every week is a priority for him.

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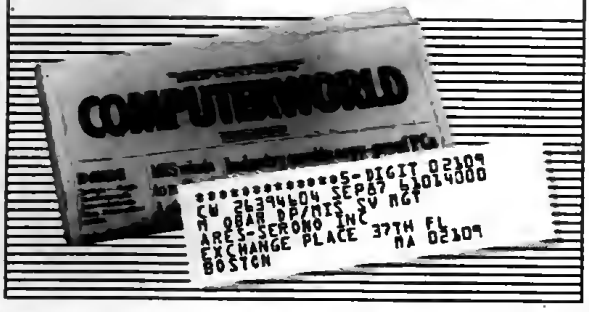


Ashton-Tate fights for respect as rivals eye Dbase treasure

Leading the charge to maintain Ashton-Tate's front-runner position *in the microcomputer data base market are President Luther Nussbaum (left) and Chairman Edward Esber.*

BY STEPHEN JONES
CW STAFF

If Ashton-Tate were looking for a spokesman these days, Rodney Dangerfield might he the logical choice.

Although it owns the lion's share of the microcomputer data base market, the Torrance, Calif.-based software developer just can't seem to get much respect.

Many users are bristling over delayed product upgrades. Analysts are lamenting dated technologies and rocky management turnovers. And Wall Street shows little faith in the company's future earnings. Even Edward Esber, Ashton-Tate's 34-year-old chairman and chief executive, acknowledges the root of the company's problems: "Today, we are perceived as a technological laggard," he says.

The timing couldn't he worse for Ashton-Tate. A gaggle of competitors, from IBM to Lotus, is likely to enter the microcomputer relational data base wars soon and snag a hefty chunk of the nearly 60% market share that Ashton-Tate currently owns.

Analysts predict competition will heat up as increasingly powerful micros based on Intel Corp.'a 80286 and 80386 processors begin to share more and more mission-critical data base information in Fortune 1,000 multiuser environments. At stake is a strategic toehold in customer companies that can he leveraged for other applications sales.

Although clearly the front-runner in today'a market, Ashton-Tate might as well have a bull's-eye tacked under its red and white logo, some industry watchers say. "Ashton-Tate will get a share of the market, but with that many formidable competitors coming in, it won't he close to what they have now," says William Shattuck, an analyst with Montgomery Securities in San Francisco.

Fortifying the home front

Esber, however, is taking the offensive. In recent months, he has fired a dozen managers, brought in senior executives with proven management savvy and attempted to beef up in-house technology with acquisitions and a handful of key hirings.

The first offering from Esber'a new and improved Ashton-Tate will be a long-awaited upgrade to the company's flagship Dbase product line.

Designed for the IBM PC-DOS environment, the Dbase III Plus upgrade is expected to feature 250,000 lines of new source code and to provide increased speed and enhanced connectivity. Although the product is expected to have limited SQL capabilities, Esber says he believes SQL's biggest impact will he with a still-unannounced OS/2 version of Dbase.

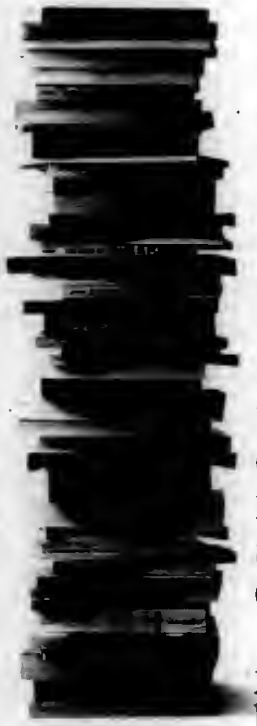
The company has also modified its "two-fork" strategy, which called for immediate product development in DOS and future, next-generation applications in OS/2. Now, according to company President Luther Nussbaum, Ashton-Tate is focusing on a more specific list of product sets on two new forks: graphics- and character-based applications.

Under the graphics umbrella, Ashton-Tate hopes to develop a series of products for the Apple Computer, Inc. Macintosh. It also plans to build products for OS/2 and the Presentation Manager.

In the character-based arena,

Continued on page SR30

Some of the best dBASE III PLUS



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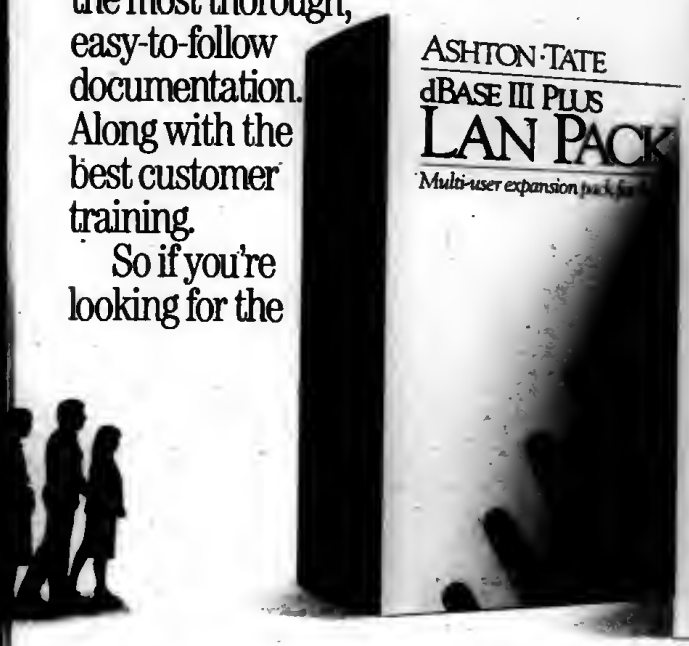

ASHTON·TATE

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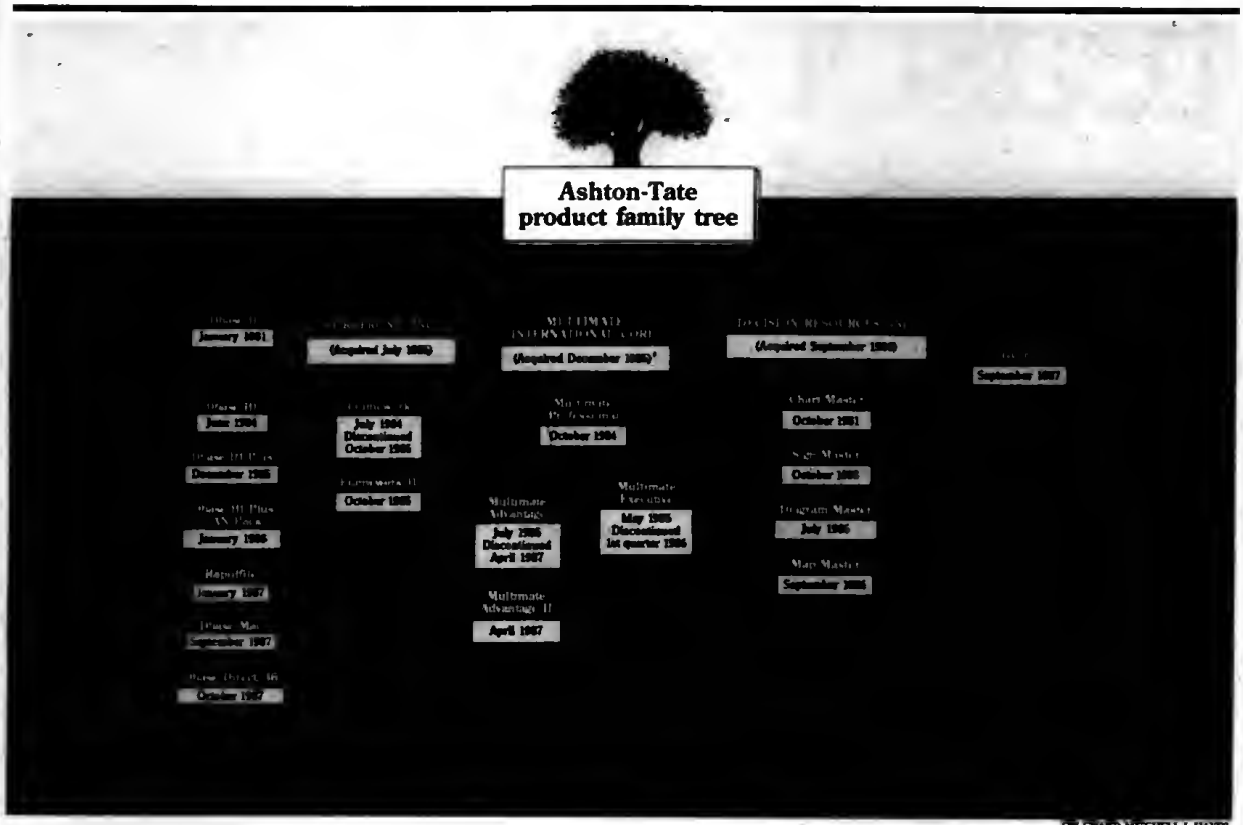

CW CHART: MITCHELL J. HAYES

Voice-activated mascot may fly the coop

What is blue and gold, speaks only about six words and spends most of its time shrieking and yelping in Ashton-Tate's lobby? No, it's not a frazzled software developer who spent too much time coding the next update of Dbase. It's "Ashton," a 4-year-old macaw that serves as the company's official mascot.

From her steel cage in a corner of the lobby, Ashton greets visitors to the company's Torrance, Calif., headquarters with a repertoire of screeches and bowls.

And when she's not giving her best rendition of South American bird calls, the blue and gold macaw usually allows a passing employee to stroke her feathers.

On wings of legals?

But sadly, Ashton's days as corporate mascot might be numbered. A custody battle appears to be brewing between Ashton's keeper and the software company.

The trouble started when Jay Hanson, Ashton-Tate's director of product support, recently decided to quit his job. Hanson and his wife have cared for the bird since 1983, when the then-president and chief executive, David Cole, said the company needed a mascot.

The Hansons took Ashton home on weekends, bathed her and grew attached to the bird. For this reason, it only seemed natural that Hanson would want to take Ashton with him when he walked out of Ashton-Tate for the last time, sources at the firm reported.

Although company officials seemed intent on keeping the macaw, they declined to parrot the details of their policy on mascots. Meanwhile, industry observers are waiting in the wings to see whether the Ashton will be taken out of Ashton-Tate.

STEPHEN JONES

Ashton-Tate

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the company plans to continue supporting the world of DOS and DOS extenders and to move ultimately into OS/2.

The plan is a kind of scattershot attempt to be in as many environments as possible. "We've decided that each of these areas is significant. Now it's up to the users and the market to decide what is most important," Nussbaum says.

But analysts say Ashton-Tate will have to flex some of its own technological muscle soon if it hopes to appease a growing number of dissatisfied users. Consistent delays on new product rollouts and upgrades have left many enhancement-hungry customers empty-handed and angry. "I just got to the point where I was so tired of waiting on Dbase that I started looking elsewhere," an MIS professional who works in a major New York bank says.

The most notable postponements have involved Dbase III Plus, which has not seen an upgrade in 22 months. "To not have any update in almost two years, you must be asleep at the wheel. It's just too long to stay out of the race," says Michael Goulde, a senior analyst with The Yankee Group in Boston.

And while Ashton-Tate has failed to blow the dust off Dbase III Plus, other developers, from Oracle Corp. and Sybase, Inc. to Fox Software, Inc. and Nantucket, Inc., have rushed in to fill the void.

"It's possible that Ashton-Tate will fall so far behind technically that other companies will take most of the Dbase market away from them," says Jeffrey Tarter, publisher of "Soft-Letter," a software industry newsletter published in Cambridge, Mass.

Last-minute glitches in other products, such as Dbase Mac and Rapidfile, have forced the company to scurry back into the development lab for unexpected rewrites, subsequently missing more market opportunities. Don Sweet, Ashton-Tate's director of Macintosh software development, admits, "We could have had a very large Mac base by now, and that is frustrating."

Yet despite the problems, Ashton-Tate's bottom line has shown impressive fortitude. The company consistently reports record increases in sales and profits and posts healthy earnings for its shareholders. Building on record revenue of almost $211 million for the year ended January 31, 1987, Ashton-Tate has not slowed down during the last two quarters.

Revenue for the six months ended July 31 was $123.8 million, compared with the $90.2 million recorded for the same period last year. Net income rose from $11.6 million for the first half of fiscal 1986 to $19.2 million this year. The company has also managed to build up a war chest of $90 million in cash. "They're very big, and they have a lot of money — I wouldn't worry about them collapsing just yet," Tarter says.

Robert Therrien, an analyst with Paine Webber, Inc. in New York, says a number of "misperceptions" about Ashton-Tate have obscured the company's strong financial performance. "Ashton-Tate really has its act together, from a management and a technological point of view," says Therrien, who re-

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> "COMPETITION is healthy. It keeps you trim, and it keeps you humble."
>
> EDWARD ESBER
> ASHTON-TATE

Ashton-Tate

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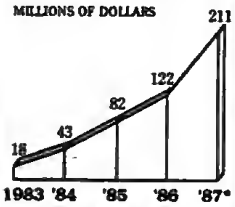
cently upgraded his recommendation on Ashton-Tate stock to a "buy" status. "The company is ready to fight," he says.

Such stability is not found in the ranks of Ashton-Tate's management, where recent departures have been likened to mice jumping off a sinking ship.

A shift in management is apparent at Ashton-Tate. Gone are the days of casual dress and carefree tinkering associated with the company's original cramped, warehouse-like building, nicknamed "the rat's maze." Today, the firm is headquartered in a chic, art deco building that boasts an expansive boardroom with frosted plate-glass windows and glowing red neon lights.

Esber and Nussbaum are making a point of conveying the buttoned-down, polished mentality of the boardroom to Ashton-Tate's young staff of developers and managers. "Ashton-Tate has needed some gray hairs," Nussbaum says.

Ashton-Tate revenue



* Fiscal year ends Jan. 31

INFORMATION PROVIDED BY ASHTON-TATE
CW CHART

But that approach has sent some Ashton-Tate executives fleeing for more easygoing companies. Many former employees criticize Esber's attempts to institute a traditional, hierarchical organization.

"That doesn't work in the programming industry, and f basically lost confidence in the company," says Ansa Software President Ronald Posner, who last year quit as Ashton-Tate's executive vice-president of sales and international operations.

Several of Ashton-Tate's defectors have joined the growing list of software developers taking aim at the company, including Posner at Ansa and Wayne Ratliff at Migent Software, Inc. But the imminent storm of competition doesn't bother Esber. "Competition is healthy. It keeps you trim, and it keeps you humble," he says. "You could be leading the pack with no competition and still fall flat on your corporate butt."

If competition can inspire some technological brilliance, Ashton-Tate might begin to get some of the respect that it has found so elusive. ■

Giants nurture, rely on aftermarket firms

BY KRISTINA B. SULLIVAN
SPECIAL TO CW

Like a patriarch presiding over an extended family reunion, Lotus this week will share its Comdex/Fall '87 exhibit space with a flock of independent developers.

These small companies, which bear names like Enfin Software Corp., Goldata Computer Services, Inc., Personics Corp., Turner Hall Publishing and Funk Software, Inc., have become a critical part of Lotus's strategy to remain one of the top software companies. These firms are part of an entire industry that has sprung up around Lotus's bedrock 1-2-3 and Symphony applications.

Lotus is not alone in spawning a so-called "aftermarket." Ashton-Tate's Dbase III and Microsoft's MS-DOS and Windows have served as the basis for hundreds of enhancement products. And, as if returning the favor, these followers have become the very backbone of the continued success of the application standards.

"The aftermarket helped to make Dbase a de facto standard," said Bob Kimball, group product manager for data base products at Ashton-Tate.

Helping hands

To varying degrees, Lotus, Ashton-Tate and Microsoft cooperate with third-party developers and encourage users to buy their products.

"We use developers as a main source of where to go in future products," says Julie Bingham, manager of the developer market for Lotus.

Lotus broadly supports all third-party developers that register with the company. Aftermarket products are defined as templates or predefined work sheets driven by macros, memory-resident programs, file-compatible applications that read and/or write Lotus files and add-ins developed with the Lotus tool kit to be physically attached to 1-2-3 code.

Last month, Lotus released Lotus Selects, a mail-order catalog of about 50 third-party aftermarket products and 25 Lotus products. The non-Lotus packages were chosen on the basis of their marketability, product quality and postsale support from among 500 entries, says Bob Hodgson, director of Lotus Selects. Included in Lotus Selects are known developers like Funk Software, Turner Hall Publishing, Personics and Intex Solutions, Inc. Lotus's own add-in products include HAL, Lotus Speedup and Lotus Learn.

Also last month, Lotus briefed some aftermarket developers on how 1-2-3 Release 3.0 would affect their products, says Tony Hatoun, president of Intex Solutions in Wellesley, Mass. Intex markets eight Lotus aftermarket products, including three add-ins.

The Consortium of Los Angeles promotes, in addition to Lotus Selects and Lotus Magazine, 1-2-3 and Dbase enhancement products. The firm represents 19 companies, pooling resources for ventures that promote the aftermarket. The group will publish next month a mail-order catalog of what it considers to be the most important 70 to 80 Lotus and Dbase aftermarket products based on the reputations of the products, says Rick Gibson, president of The Consortium.

Quit cloning around

While Lotus encourages efforts that enhance its products, the firm is at war with another form of aftermarket vendor: the 1-2-3 clone makers.

The best known of these are Paperback Software International and Mosaic Software, Inc., which Lotus sued for copying the "look and feel" of 1-2-3 with their products, called VP-Planner and Twin, respectively. However, the suits have not stopped both Borland International and Lifetree Software, Inc. from coming out with inexpensive packages that duplicate and expand on Lotus functions.

Ashton-Tate has more recently begun cataloging and organizing the players in its own aftermarket. Hundreds of Dbase utilities can also be found on bulletin boards across the country. Among the best known is Dscar, a Dbase debugging system, developed by 16-year-old Ryan Katri, according to Randy Wallin, president of COB System Design, maker of Quiet Flight Dbase utilities in Pompano Beach, Fla.

Ashton-Tate supports its developer community with an annual conference and its Developer Registry, a $24.95 phonebook-size collection of 1,140 Dbase consultants and 892 software products that the company says cover "every area from hog farming to yacht racing."

Independents that create promising markets on their own are sometimes bought by one of the Big Three. Lotus's current product stable includes more than a half dozen former aftermarket products including HAL, Signal, Onesource, Metro and the Freelance series. Ashton-Tate is negotiating with Apex Software Corp. in Pittsburgh for the rights to Front Runner, a compiler that allows the creation of memory-resident Dbase applications.

Microsoft supports third-party developers through an Independent Software Vendors (ISV) program. Developers can subscribe to a bulletin board service that provides lists of bugs and allows users to submit questions.

Microsoft supports more aggressively its Windows ISVs with marketing promotions and new product release information. About 100 vendors have announced products to run under the graphical operating environment.

One of the largest aftermarkets belongs to companies that extend and enhance the most basic of Microsoft products — MS-DOS.

A multitude of products are available that overcome such MS-DOS weaknesses as its unfriendly user interface, slow backup speed and inability to recover deleted files. They include Norton Utilities from Norton Computing; Fastback from Fifth Generation Systems, Inc.; Direc-Tree from Micro-Z Co. in Rolling Hills, Calif.; Disk Manager from Ontrack Computers Systems, Inc. in Eden Prairie, Minn.; and DCache from Microway, Inc. in Plymouth, Mass.

Among the most popular MS-DOS add-ons are extenders that let applications exceed the operating system's 640K-byte memory limit. A.I. Architects, Inc. in Cambridge, Mass., for example, is now shipping extensions that run on top of MS-DOS and allow programs to access up to 15M bytes of memory on an Intel Corp. 80286 machine or 4G bytes of memory on an Intel 80386. Standard MS-DOS programs can run simultaneously.

Several other products give MS-DOS the ability to multitask or run several programs at once. They include Softlogic Solutions' Software Carousel and Double DOS, Quarterdeck Office Systems' Desqview, IBM's Topview and Microsoft's Windows.

Microsoft also offers the MS-DOS Manager, a shell designed to help users run DOS commands. The package is currently bundled with Zenith Data Systems's Eazy PC.

Unlike the Dbase and 1-2-3 markets, there is little, if any, organization among DOS developers. Much of this is because of the diverse nature of the DOS aftermarket. "There are all types of different embellishments in the DOS aftermarket since it's not constrained to the format of a data base or spreadsheet," said Edward Tolson, president of Softlogic Solutions, Inc. in Manchester, N.H. ■

ONE OF THE largest aftermarkets belongs to companies that extend and enhance the most basic of Microsoft products — MS-DOS.

Sullivan is a free-lance writer based in Ashland, Mass.

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Service competition heats up; users benefit from lower costs

Marriott's Herberg

BRAD MARKEL/GAMMA LIAISON

Giant Food's Alston

Riggs Bank's Shillow

Always seeking a strategic edge, major computer vendors consistently push service and maintenance. Any survey or report that doles out high marks for service inevitably becomes a sales tool. IBM recently raised the stakes by announcing aggressive programs that provide significant discounts in return for long-term service contracts. What effect is this having on customers? How are independent service vendors responding?

To discuss these issues, *Computerworld* Senior Editor Glenn Rifkin met last month in an executive roundtable in Washington, D.C. with James Shillow III, senior vice-president of MIS at The Riggs National Bank of Washington, D.C.; Ron Herberg, vice-president of electronic data processing operations at Marriott Corp.; and John Alston Jr., director of DP operations at Giant Food, Inc.

What service and maintenance issues top your list?

Shillow: Foremost is cost. On the hardware side of things, there are two service flavors: preventive and reactive. Most of the vendors we deal with do a fairly good job on the reactive side. If they didn't, they wouldn't be servicing accounts that have to have very high uptime. On the preventive side, though, is where you start to see some differentiation of vendors. They do not all necessarily do their homework on an equal basis in terms of heading off problems. That's been one of the biggest problems we've wrestled with.

Herberg: When it comes to service, to be quite honest, most of the new technology really has no preventive maintenance schedule. For the most part, we don't see a need for it. The IBM 3380s, 3725s, even the processors themselves — there's really nothing to do on them. A problem does occur if they fail. Our biggest problem is disrupting the balance of the operation.

Another big problem is when we go in and make major changes. The costs for IBM installations are fairly significant. This past year we had upgrades from 3880 controllers, and we found a third party to do them at a significant savings. Between that time in June and now, IBM maintenance pricing has been significantly reduced. We think they are reacting to the fact that they were overpriced in certain installation-type activities.

The only area that is really maintenance-intensive is printers and any mechanical devices we have. I haven't seen anything work there, from a preventive maintenance or a remedial maintenance view. We rely heavily on laser printing to get our volumes out. But you always get caught. You cannot predict when those things will fail. I attribute that to their mechanical nature, and that's where we get all our problems.

Shillow: Ron [Herberg] really hit on two key points that are essential in managing any large MIS organization. One is the issue of technology moving as fast as it does. There's a constant struggle in any organization that wants the most current technology, but there is clearly a lag time in terms of service and support of that technology.

Our philosophy at Riggs is clearly not to be on the bleeding edge. We look for stabilized types of hardware or software in terms of being able to service and support it.

The other key point is that, today, there is a very large hidden cost of "service and maintenance," which is in the built-in redundancies you have to have with twin processors and backup systems. So when you look at maintenance and service dollars and what is truly being spent to achieve uptime, it's a lot more than maintenance contracts and the maintenance bills you pay. That's a point vendors tend to overlook.

Alston: I have pretty much the same view about maintenance. Mechanical things are unpredictable; printers are what we have problems with. We're having to stock up with duplicate devices to get us through the processing, to help us out in case we have a failure so we won't be totally out of the water.

Shillow: It becomes a heavy investment for that 5% of the time you need it.

Alston: Definitely.

Are you dealing with IBM for service, or do you go through a third party like Sorbus?

Alston: We use Sorbus for things like sorters, IBM 519s, 557s, reproducing punch machines. We're nearing the last few years of using that equipment in our

Competition

FROM PREVIOUS PAGE

current applications. IBM no longer services that equipment.

We contracted for service from Sorbus. They stepped right in and took over the job.

As a matter of fact, if you compare Sorbus's service in the past six months, it's better, in my eyes, than the service from IBM in the past five years on those devices. Sorbus responds much quicker.

Did you consider using Sorbus for your computer equipment?

Alston: We've actually created, within Giant Food, a function we call Equipment Repair. We're bringing a lot of the maintenance back in-house, with the exception of the mainframe. I don't think we would ever attempt to tackle that. But for devices that we have a large quantity of — terminals, printers, PCs — it's worth it to us to spend the money to get the technicians trained. We're training technicians in-house, and we're servicing those pieces ourselves.

Are you doing that in conjunction with Sorbus?

Alston: In conjunction but not on the same equipment. For example, our in-store terminals and processors are maintained by our internal Equipment Repair staff.

How many are on that staff?

Alston: Approximately 20 associates. It started about two years back, and it is under the construction/engineering umbrella.

Herberg: We generally deal directly with the equipment manufacturer. There's one exception, and that's in the PC arena. We've had multiple contracts on PCs. Two or three years ago, we had a contract with one vendor, and we switched to Unisys this last time around.

Shillow: At Riggs, we have a mix of all the various options. We use the primary vendor in many cases. We utilize in-house staff on a limited basis for the PC environment. We also use some third-party vendors for our ATMs and peripheral-type service contracts.

The third-party market is becoming a maturing market. The third-party people have demonstrated their ability to maintain high service levels at generally 25% to 30% off normal maintenance costs.

Another development we are taking a look at is companies that consolidate all of your maintenance. However, they do not do the maintenance. They contract that maintenance back out to the primary vendor.

These consolidation companies do the contract, and they cover the time and materials. You pay them a flat contract fee, and they make profit on the spread. That essentially tells me that the primary vendors have been making an absolutely exorbitant profit margin — to the tune of probably 25% to 30% — for quite some time.

We're now seeing this new phenomena forcing the primary vendors back into a discounting of maintenance contracts similar to IBM's new Customer Service Amendment [CSA] program.

How much of your budget would you say goes to service and maintenance?

Shillow: A little under 5% for us, for pure hardware.

Alston: Ours is about 5.2%.

Herberg: Ours is right at 5%, if you just take hardware into account.

I have to qualify that, though. Personal computers are not in my budget. That's basically $200 a pop for whoever has the personal computer. This is pure maintenance costs. This is not associated with any management effort or help desk or anything like that. So it's 5% for what is at the data center.

What is your biggest maintenance headache?

Herberg: If I had to peg anything as causing most of our downtime, it's really been software maintenance.

We had a philosophy up until two or three years ago of not being on the bleeding edge, especially when it came to software, and it cost us. It cost us because the operating systems we were on and the communications capabilities that we had were too far behind. And to catch up, it was a really extensive effort. We've been current now for the past two years.

Now, our biggest problem is that we obviously have to make the transition from one software release to the next. And even in that arena, outside the TPF arena, at least, the transitions are greatly simplified by IBM's direction to allow you to cohabitate software as well as bring it on and back it off, almost without disruption.

I remember when everytime JES [IBM's Job Entry System under MVS] went down, in effect, the system went down. Now you can bring JES down, and everything that's running still runs. You bring JES back up and anybody that was on it didn't know it. And you're talking about minutes, not a half hour. It's very quick.

Shillow: Looking at cost, interestingly enough, I now find that software maintenance is running just about double that of hardware maintenance. When I started in this business, it was just a complete reversal of that.

Alston: It's pushing us to look at the one-system site instead of having two CPUs, one as a back-up for the other. We're having to rethink that because the downtime on the newer systems is almost nonexistent, compared with the 1960s and '70s. As you move into the 3090 family, you have four or six internal CPUs backing up one another. It's pushing you toward the one-system site to justify the software cost.

Herberg: Did you include software maintenance in your maintenance number?

Shillow: Strictly hardware.

Herbert: Good, because I agree with you that software maintenance costs are probably equal to our hardware maintenance costs. That's consistent with IBM's unbundling. That's how they've been bringing the hardware costs down.

Shillow: They are clearly shifting from a hardware revenue production company to primarily a software revenue production.

Herberg: One thing we're trying to do is basically keep all our licenses with one machine. Rather than the company getting multiple machines, we just get a bigger machine, because the software costs are really that significant.

So hardware is becoming a nonissue?

Shillow: They've really turned the computer back on itself in terms of maintenance and diagnostics. Software maintenance clearly has not reached that level of maturity.

IBM is getting aggressive with the CSA announcement [essentially a discount service and maintenance schedule tied into long-term contractual agreements with IBM], and it's also just announced the Mid-Range System Amendment. Is IBM doing a little arm-twisting with this?

Shillow: Absolutely. They are feeling the intrusion of competitors in this field. It's, "I'll give you something, you give me something. I'll give you a discounted rate and good quality service, you give me a long-term obligation." They want that

> "WE'RE TRYING to keep all our licenses with one machine. Rather than the company getting multiple machines, we just get a bigger machine, because the software costs are really that significant."
>
> RON HERBERG
> MARRIOTT CORP.

Concerning software maintenance

As hardware worries lessen, a focus on software maintenance has taken their place. *Computerworld* Senior Editor Glenn Rifkin asked the roundtable participants about their software worries.

What are your software maintenance concerns?

Shillow: It's directly opposite of hardware. We use an awful lot of packages and prebuilt software. We are one organization to a few hardware vendors. But we are one organization to many, many software vendors, probably in the dozens. And that's where the compatibility issue is.

It is truly a heterogeneous environment, and there is no one vendor who supports all that. You're forced, today, to deal with many vendors. That in itself causes a tremendous coordination problem.

Alston: Another problem is software packages being bought up by others that have similar packages. I'm talking about Netman, which was originally created by California Software and then bought up by Uccel, which, in turn, was acquired by Computer Associates. In a time frame of 12 months, you've got three companies that have condensed into one company, and all three have similar products. So all the users are waiting, wondering what is going to be the end result.

Herberg: Our concern was that we selected some Computer Associates as well as some Uccel products, and we're sitting here thinking, "Geez, they bought up all those companies and we evaluated their products and we picked the best one. Now what are they going to do?" In one case, they said the product we didn't choose is their direction. So we dumped them.

I don't see anything on the horizon to say that software maintenance is going to go the way of hardware maintenance. I don't see anybody going in there saying, "Hey, we're going to do it all." I see that as being an internal effort to coordinate it.

Shillow: You're starting to see some large software conglomerates forming by merger and acquisition. But they are lagging probably 10 to 15 years behind the hardware business. The primary major hardware vendors have been involved in integrated service environments for a long time.

Software companies are not designed that way. They are designed for support of a specialized product. But in an organization with a conglomeration of software, that is really the most immense service challenge of all. Plus software changes two or three times a year, and hardware is not that fast-paced. It's a very difficult game to keep up with.

What do you do internally about it now? Do you designate people to be specialists in a package?

Alston: We assign one person to install that project, learn about it, attend all the seminars and meetings on it. And they become the guru of that product.

We don't attempt to keep up with all of the latest releases, but we do want to stay current. We're looking for stability without getting too far behind. As Ron [Herberg] said before, that can cost you.

Herberg: Don't get me wrong; we don't have somebody waiting for the next release so they can slap it on by the next morning. But there is a conscious effort to be current, not to be on obsolete software.

Shillow: There's one other issue concerning software vs. hardware in maintenance. Your hardware vendors are generally distributed all over the country with local field offices. When you deal with software, they may be in one city, and, therefore, you have no choice but to have your own in-house staff who also know that product and can work with them, because they are not right around the corner and can't come in to fix your product.

long-term lock-in.

Alston: We became a member of the CSA program starting back in June. We've got a contract with IBM to stay with them for the next five years. I see the arm-twisting, in a sense. But I'm looking at the benefits that we are seeing — the discounts for the maintenance — and that's great.

In turn, they are asking us to not only stay with them but to use a problem management system. We are currently up under a change and problem management system called Netman. They didn't ask us to change from that.

Shillow: There seems to be a real competition for that maintenance dollar between IBM and the third parties. I see the BUNCH companies as not really reacting the same way to this. They're still in the same process of direct maintenance contracts. And, quite frankly, I think they are going to lose by that. Sooner or later, everybody is trying to simplify their world.

The ideal would be to have one vendor that took care of all the problems. IBM still has not gone outside its arena to any great degree. But the third parties are clearly trying to get their arms around this.

It seems that the third parties have to be concerned about IBM's recent moves.

Alston: From what I see of Sorbus, I think they're happy with the business they're getting from the products and devices IBM is dropping from maintenance contracts, although there is surely a greater desire to take more of that business from IBM. And I've got to think they're a bit upset with IBM coming out with this program.

Shillow: IBM has just met the competition: the third-party market. They both were quality; the lopsided advantage to the third parties was just a very significant discounted rate, which IBM has just met. IBM has taken it one step further by trying to bundle in the long-term lock-in. I think you'll see the third parties try to do the same thing.

Herberg: The third parties have always required some kind of contractual commitment, even if it was just one year. With CSA, you don't have to go all the way to five years. They basically stagger it by discounts. So the more you commit, the deeper they cut into the maintenance rate.

IBM is not the only one doing that. Our point-of-sale devices are out there in our restaurants, and those vendors are also willing to give substantial discounts. So I don't see it being just IBM.

IBM service reps have been saying that they finally have a clear view of the strategy and direction and that it has been a problem for them over the years. Have you sensed that the reps didn't have a clear view of where things were going?

Shillow: I've seen the ups and downs in that business. IBM was losing a lot of its field engineering force to third parties. A lot of the third-party people used to work for IBM. I don't know the internals of that process, but I would assume IBM is attempting to stabilize the base.

In our particular case, we've had very solid, very experienced, long-term people. But I've seen the opposite, the swinging door syndrome in an organization, which can just play havoc with your uptime and maintenance ability. That's a tough problem to straighten out.

How do you measure the quality of service?

Shillow: Unscheduled downtime and cost. If it's high availability, I'm happy.

Herberg: I'd agree with Jim [Shillow]. When you need them, if they respond in a timely way and they get the system up, then you're happy. If not, you are beating down doors. It doesn't happen very often. I can't remember the last time we had a system failure.

Alston: A system failure can be measured in different ways. To an end user, a terminal going down is a system failure. We have Harris terminals, and we found that their service technicians would take the time to work with our users. They aren't just technicians; they are people managers also.

The end user doesn't know about all the different systems that you have — a VTAM failure, other transaction processing failures or a hardware problem. To them, the system is down and is in need of an expedient fix. The one with the most pleasant attitude who can get that piece of equipment up the fastest is the one the end user prefers. So we're using the feedback of the end user to measure the quality of service.

> "THE hardware hears, the software listens. There's a big difference."
>
> JAMES SHILLOW III
> THE RIGGS NATIONAL BANK

Shillow: It's an on-line world today, in which a disk may have high reliability — a CPU may, too — but if some critical component is down, the overall availability of the network from the user's view is really the true measure of service.

In a networked environment, you have a much more complicated service problem. Who do you rely on in a multivendor environment?

Alston: We rely on ourselves. We have what we call a help desk. We try to educate the end user to call the number. And we have a technician trained in-house standing by. We have a number of spare terminals out in a certain room. And if the application is affected or the tube has blown and it is not a quick fix, then we would replace that terminal. That way, you are keeping the user up 99% of the time. You're not waiting for a technician to take a half-hour drive or maybe longer in rush hour. We can't afford for the user to be out of the water for that long.

Herberg: Our network operations group basically determines what the problem is. And our biggest problem, when it gets right down to it, isn't even in the computer room; it's one of several telecommunications vendors or a local telephone operating company. Somebody puts their backhoe through a hunk of cable. That's one of the biggest causes of outages to users at a remote location.

The outage cannot be at the central site. At the central site, you are affecting everybody. At least if they have a local outage — let's say the cable is cut — that is limited. And that's where a lot of our focus is, getting the telecommunications vendor out there or reconfiguring the networks to get around that.

Alston: That ties into disaster recovery. Back in the '70s, the focus was on the central processor, because most of your work was batch. And if that went down, it stopped the whole world. And when you look at disaster recovery now, you no longer look at the central computer — you look at telephone lines, at everything. A disaster can be any portion of that.

Is it isolated enough so that you know it is a specific vendor problem?

Shillow: We're not that highly integrated. We can determine whether it's Burroughs, Wang, DEC or IBM. There are certain times when you are dealing with the linkages between those, a la the communications vendors, when it does not become quite so black and white. But generally in our environment, we are not that tightly coupled between those vendors. So it's easy to identify what is down.

So you're forced to have, from a service point of view, a relationship with all of them?

Shillow: Absolutely.

Herberg: Typically, where we are coupling systems, the problem hasn't been hardware; it's been software. The hardware can be running fine, but if the software is not compatible or it does not come up to the right code level, that's when you get sporadic problems. Sometimes you think it's hardware, but ultimately it's been a problem in the software code.

Shillow: The hardware hears, the software listens. There's a big difference.

At the PC level, how much does service and maintenance play a part?

Shillow: In terms of PCs, service and maintenance is assumed. Availability of software and its support is far more critical than the hardware and its stability.

What about remote diagnostics? How far can that go?

Alston: IBM gets into that in the 3090 series, where the system actually makes the service call. I think it's an excellent idea. With the 3090, I've heard that the first time we would see the IBM people is when they are coming in the door with the parts to replace something. The system hasn't even gone down.

Herberg: How far can it go? I see it going all the way. I don't see any other alternative. In the networking environment, we

The participants

John Alston Jr. is director of data processing operations at Giant Food, Inc. A 15-year MIS veteran, Alston is responsible for both of Giant's data centers, located in Landover and Jessup, Md. He directs activities of both centers, including production control, data entry and the company's help desk, which provides both in-store and corporate headquarters end-user support.

According to Alston, Giant Food is a mixed IBM shop. The DP budget at the corporation is approximately $17 million, and there are nearly 300 MIS employees. Prior to joining Giant seven years ago, Alston served as a programmer/analyst for the NASA Space Flight Center located in Greenbelt, Md.

Giant Food, a $2.5 billion supermarket chain, runs 44 stores throughout Virginia, Maryland and the District of Columbia. Giant has nearly 24,000 full- and part-time staffers.

Ron Herberg is vice-president of electronic data processing operations at Marriott Corp. Herberg oversees an MIS budget of between $1.5 million and $20 million with a staff of nearly 300 professionals. The brand-new data center in Frederick, Md., consists of multiple IBM systems supporting a worldwide network with multivendor terminals and distributed systems. Herberg has been in his position since 1984 and with Marriott since 1974.

Marriott is one of the country's leading hotel and hospitality companies, based in Bethesda, Md. The $5.3 billion corporation operates in 50 states and 26 countries and has more than 200,000 employees.

James Shillow III is senior vice-president and director of MIS for The Riggs National Bank of Washington, D.C., a $6 billion commercial bank. He is responsible for all MIS-related operations, domestic and international, in the bank's D.C., Maryland, Virginia and London technical sites. He oversees 150 staffers with a direct annual budget of $12 million in his IBM shop. Shillow has spent 17 years in the MIS end of the banking and financial services industry. Prior to joining Riggs, he was vice-president of DP at Hamilton Bank, vice-president of business applications at Equitable Bank NA and senior vice-president and general manager of NCR Corp. products at Anacomp, Inc. He is currently secretary and a member of the executive committee of the Society for Information Management, Capital Area Chapter.

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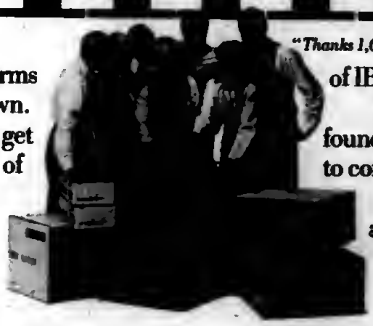

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have ties into AT&T's Chicago facilities to do diagnosis ourselves, to make sure that when somebody from AT&T goes out there, they have a very specific understanding of what the problem is as we see it. Not everybody walks in with the right part. But it's getting more and more that way.

Shillow: I agree. Service is clearly going centralized, and the motive for doing that from the vendor's side is common sense: a very small group, low in cost but much higher quality. That's fine for hardware, because you are dealing with a pretty decent level of internal intelligence with hardware. My problem is that they are moving everything, software and hardware, that way. And I don't think software is intelligent enough at this point.

I personally have a real difficult time with centralized software support, because it is still a labor-intensive process, unfortunately. When you've got to deal with someone who is a couple hundred miles away and can't come in and fix a problem, that is a practical difficulty when you are trying to run an operation.

Has remote service caused you to lose personal contact with your service rep? Do you prefer personal contact?

Alston: We force the contact. We set up meetings every two weeks just to go over errors that we've gotten on the hardware, errors that wouldn't normally take you down. We have to continue to force that because they are moving further and further away from us with all the remote systems diagnosis. The customer engineer must stay on-site for the other things, the mechanical devices we spoke about earlier. We're still having a high number of failures, especially with our printers. It's important that we maintain that communication.

Herberg: In our environment, we are changing things every year, during the year, and it is very important to have continuity.

Shillow: It's still clearly a people business. Given a choice between a remote, cold-blooded diagnostic facility vs. an on-site expert who you knew and could work with on many issues — not just when a problem occurs, but on preventive kinds of things — I would clearly prefer the latter. But unfortunately, that choice is quickly disappearing.

Have you expressed to your service providers that that is a concern?

Shillow: Not to great avail.

Herberg: We have a dedicated engineer that works at the site during the day. We have a designated person both for software and hardware and for marketing. They have an office in one of our locations. There is, obviously, a customer engineer at the data center. If we have technical questions or are doing a planning session, we bring him in on that.

Shillow: I met a couple of weeks ago with the IBM group vice-president for service. They had just moved 5,000 people back to the field. IBM has a recognized, national mission — that they are going full circle back to where they were 10 years ago when the customer engineer or systems engineer, or whoever came into your account, many times understood your operation better than a lot of your people did.

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contact many times with their customer clients and do not really understand the business anymore.

Most of the people have very few years of experience. They have quantity of personnel, but the quality has suffered somewhat because of that lack of contact, lack of understanding about what a customer's operation is all about.

It's fine to have a centralized approach when something breaks, because you need urgent reaction time to fix something. But service and maintenance go far beyond just when something breaks. It is understanding operations, putting things together in the first place when you are building something that makes sense. That is very difficult to do, from a centralized point of view.

Herberg: When we moved the entire data center recently, you could not make major changes and just call somebody to, say, show up at 2:00 a.m. to do this. They have to have an understanding of the system and what is running on it.

So we have, I feel, very successfully made some major changes. We've moved our data center from one location to the other. That involved moving a 3081 and its entire complement of equipment, and it was down just under 24 hours. Obviously, the equipment vendor was very key.

Shillow: I welcome the change now from most of the primary vendors that say they will work jointly in planning and design sessions with other vendors. That was absolutely unheard of as little as three or four years ago.

Who drove that cooperation between vendors? Was it the customers, or did the vendors figure it out themselves?

Shillow: They finally heard us beating on the door long enough. They had to respond to it.

Who has taken the lead among the vendors?

Shillow: The independents took the lead. IBM was clearly on the back end. That's like turning a battleship vs. turning a rowboat. It's difficult for IBM to make a major policy change.

When did it become clear that IBM's pricing was getting out of line?

Alston: IBM became relaxed to a certain degree, which allowed the smaller service vendor to come in. And when they came in, they came in with a lot of steam, wanting to do anything and everything for you. You could see the service difference. And they cut the price.

Roundtable participants *(left to right) Shillow, Alston and Herberg.* BRAD MARKEL/GAMMA LIAISON

Now, we mention that we are going full cycle here and IBM is trying to get back in. I don't think they can get back in with the service level they had when they left. It's not possible. Because in comparison, IBM's service levels are still behind some of the smaller vendors'.

Do you see much finger-pointing in the service sector?

Herberg: I don't see finger-pointing. People talk about it, but I have never seen it, perhaps because we are clearly an IBM shop.

If there was any finger-pointing, it was one piece of software to the other and trying to figure out which component was out of sync. That was basically all within IBM. I never viewed that as finger-pointing.

If our network fails, there's no question what failed. We know it's a circuit failure. The call goes out. They don't say, "It's your equipment." To me, it is much clearer than it was in the past.

Shillow: I think the finger-pointing still goes on, we just don't see it. They've learned that's the worst thing you can do in an account. •

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The critical success factor that counts

Companies look for leadership ability, not just management skill

BY F. J. GRANT

In the last five years, a significant number of MIS managers found themselves not being considered for further promotion. Instead, the creation of a relatively new position, the chief information officer (CIO), left more than a few information systems executives bypassed by apparently less experienced personnel.

Grant is an independent consultant in Marietta, Ga., who concentrates on large-scale financial and manufacturing systems. He is the author of numerous articles and technical papers, including "Missing: DP management," "Twenty-first century software" and "The down side of 4GLs."

To make matters worse, this new breed of company officer has made a difference. Although a study by Arthur Andersen & Co. shows that only 40% of Fortune 500 service and industrial companies have an employee by that title, CIOs have, across the board, improved the performance of their organizations.

But the fact is that most CIOs come from outside the company — and some from outside MIS altogether. Many CIOs are not computer professionals, and a study by The Diebold Group, Inc. shows that less than half possess extensive technical experience. This hiring pattern signals that an essential part of the CIO role is to supply an executive dimension that the MIS function currently lacks.

Given that most CIOs have not followed the usual rites of passage associated with MIS management — progression through the ranks of programmer, systems analyst, project leader and so on — this dimension is certainly not technical expertise. And, in light of the fact that many CIOs are relatively young and have not "grown up" alongside their businesses, this element cannot be years of DP experience per se or even years of experience.

If programming experience, technical prowess and management ability are not the critical qualifications for top-level MIS management, these factors must not be critical for the success of a business either.

Only one element appears to be critical: leadership.

Why leadership? Simply stated, money.

The most important financial principle of executive management is axiomatic: Even a slight increase in the productivity of each employee is a potential increase to the bottom line. The cumulative effect of even a 1% increase in individual worker cost consciousness, for example, can amount to millions of dollars in annual savings for any firm in the Fortune 1,000. For smaller companies, it can mean the difference between profit and loss.

For firms heavily dependent on information systems, the effects of an increase in cost consciousness, quality or productivity can be especially profound. For example, a small, sustained

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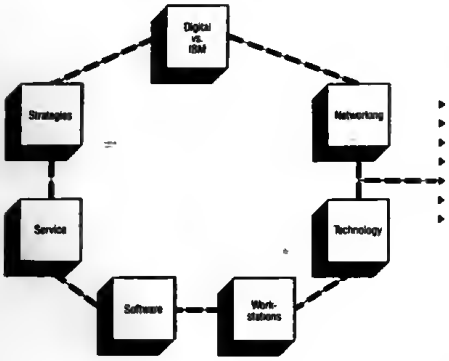

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increase in MIS cost consciousness — something as minor as volume of paper used — can amount to hundreds of dollars per week.

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For many MIS managers, however, even a slight increase in cost consciousness, quality or productivity seems impossible to achieve — let alone sustain.

People are the key

Technically, it seems simple enough: Just get people to work harder and smarter. Yet, the average MIS maintenance backlog for most companies exceeds 17 months — not to mention all the requests for new systems. Despite enormous increases in expenditures for hardware, software and programming aids, most companies' productivity, information systems quality and cost consciousness remain appreciably unaffected.

Dare we admit it? The barrier to lower costs, higher productivity and better quality information systems is not technology. The key is people. And it is leadership — not technology or management — that inspires more effort on the job.

Frankly speaking, leadership is not well understood in modern American society, which is ironic because we as a nation have produced more business leaders than any other. Much like the concept of "quality," leadership defies a precise definition. Like quality, "you know it when you see it."

In the business world, no employee consciously defines leadership, but each one instinctively knows what it is. And every employee knows when leadership is absent; to wit, strong morale does not accompany weak leadership.

We as a country can certainly recognize when leadership is lacking. In the 1950s and '60s, for example, there was a common feeling among young people that they had lost their heroes and leaders. To many, the high price paid in Korea and Vietnam can be traced to a lack of basic leadership, not a lack of the technical knowledge of what to do to "win."

This is another way of saying that the management of technology often obscures the real issues of leadership. Leaders, one way or another, tend to stand out and be noticed; it is their nature. And it is often their nature to rub an establishment's nonleaders and nonperformers the wrong way.

In a business context, leadership is the ability to build the commitment of employees, to endow an organization with a positive perception of itself and employees with a positive perception of their role within the business.

A leader can dramatically influence a business organization, a baseball team or even a country. He or she does this through some type of interpersonal dynamic that consistently works but is not understood well enough to become part of the body of thought called "the science of management."

FOR MANY MIS managers, even a slight increase in cost consciousness, quality or productivity seems impossible to achieve — let alone sustain.

The lack of understanding of a leadership as a force in business situations does not negate the reality of its effect. All things being equal, the performance of people within any organization is a direct reflection of the leadership to which employees are exposed.

This is especially true of MIS organizations, where technology is not generally considered a factor limiting higher productivity. A lack of commitment — not a lack of technique — often prevents employees from contributing to the organization in a meaningful fashion. Leaders build that commitment.

Semantics of leading

For years, business schools have taught that leaders are made, not born. However, are business leaders being made from the processes we have refined for a half century in our various social institutions? I think not.

Leadership and management are two different things. The keystone of modern management technique is to focus on employee behavior, not the employees themselves. With a pool of qualified workers, it is apparently difficult for managers to admit that individuals can still make a difference in multimillion dollar companies. Yet, we know they do.

The sad truth is that most MIS managers do not know how to make employees feel valuable. Feelings of achievement, recognition for good work and a sense of meaningful professional advancement are foreign to many MIS workers. Without such messages, it is impossible to build employee commitment.

Too many MIS managers lack the formal training — or sometimes even the common sense — to understand that

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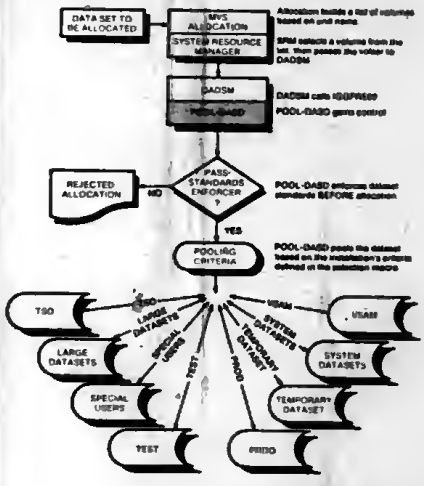

POOL-DASD is an IBM MVS mainframe software product that dynamically controls data set pooling and enforces installation data set standards. POOL-DASD operates as a "frontend" to the DADSM pre-processing and post-processing exits (IGGPREOO/IGGPOSTO). POOL-DASD gets control during the five basic DADSM functions: Allocate, Extend, Release, Scratch, and Rename.

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most employees need realistic feedback on their performance. While annual or semiannual performance appraisals can be used as a tool to encourage better work behavior, true leaders provide this type of feedback, naturally, in their day-to-day actions.

Moreover, a growing body of evidence attests that many of the traditional management techniques currently in practice may not be as effective for MIS professionals as they are for other types of workers. Some management practices may actually result in worker alienation and loss of initiative.

MIS managers' failure to communicate how performance measures up to company objectives can deflate the ambition of highly talented employees. For the less talented, a manager's evaluation procedures may backfire in a different way by leaving the impression that current performance levels are adequate. For MIS managers, attention to people should always be as important as attention to detail. Sustained high performance does not occur accidentally.

Another factor differentiating leadership from management is our current organizational structure. The way most organizations are designed ends up negating contributions from outstanding individuals and discouraging potential leaders.

Outdated structure

The history of human organizations is one of attempts to attain efficiency. For example, one organizational goal is to make group actions more efficient by removing any individual decision-making initiatives.

Current business organizational forms were developed long before automation, however, and in many ways, they were a substitute for it. The fact that we can now automate many functions has not resulted in adjustments.

Today, organizational efficiency is similar to a three-legged stool. Its tenets are: repetitive job assignments, interchangeable employees and an atmosphere of "Don't rock the boat with new ideas." This is a chilling environment for leadership development, a process often sparked by new ideas.

IN MOST Fortune 1,000 companies, MIS professionals learn at some point not to cause problems by going against the system, even when the system is wrong.

Replaceable?

In most companies in the Fortune 1,000, MIS professionals are rewarded for being team players. This means they must learn, at some point in their careers, not to cause problems by going against the system, even when the system is wrong. MIS employees who spend years working in highly structured bureaucracies with impersonal, highly formalized rules gradually learn complacency. The work ceases to have meaning and may become nothing more than a ritual.

Obviously, if leadership can be learned, then a lack of leadership models for up-and-coming MIS managers is one of the primary reasons for the absence of leadership abilities.

How can workers who are themselves regarded as a replaceable parts be expected to overcome sluggish production rates and poor quality? Can such workers ever be expected to displace the expectations of their own management?

Wheo middle managers are unable to say no to upper managers, they cease being leaders and become followers. Eventually, their jobs become unnecessary.

Score yourself

You can determine the effectiveness of MIS leadership by asking a series of commonsense questions:

- How do MIS customers rate the department's performance?
- Does the MIS organization have a solid record of accomplishment?
- Does the MIS function have direction?
- Are MIS costs reasonable,

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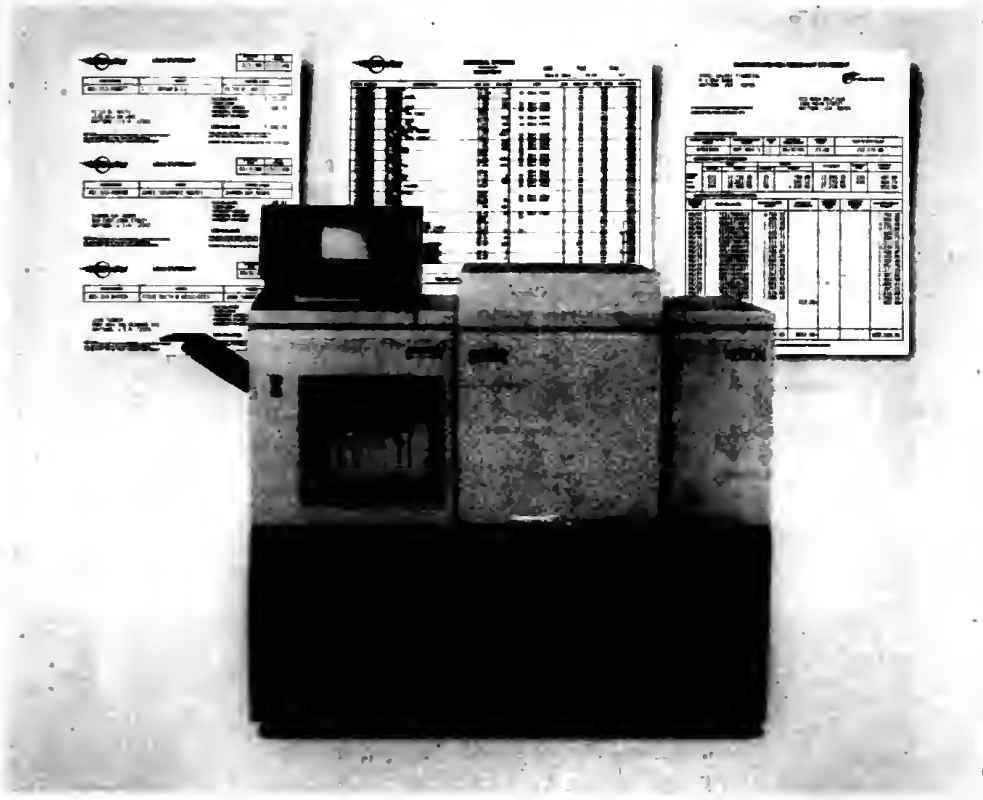

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high or out of control?

• Are MIS personnel generally apathetic or unresponsive?

• Will your company's MIS expenditures result in reduced operational costs and greater contribution margins or produce some type of competitive edge?

Unfortunately, many chief executive officers ask these questions and find relatively poor MIS track records and serious operational deficiencies that seem to escape mention during weekly meetings. The bottom line is that, in the late 1980s, many CEOs are not satisfied with the level of MIS service their companies receive.

Defining culture

The answers to the above questions essentially define a corporation's MIS culture. Corporate cultures are important to performance because the employees' perception of themselves and their organization conditions their morale.

Just as an athletic team's self-perception often limits or enhances its ability to win, poor corporate cultures limit employees' ability to contribute in a meaningful fashion. In contrast, performance improves when workers know they can be winners.

Business units that consistently fail to meet objectives set by top management do so either because they lack management or because they lack leadership. It is obvious that a unit lacks leadership if there are no identifiable standards for the organization; it lacks management if standards are identifiable but they are not enforced.

Difficulty in assessing the real needs of customers, lack of appropriate planning, inability to get top management support, poorly defined or reactive management policies — all of these occur because of a lack of leadership, not a lack of management. There is usually layer upon layer of management.

Lack of leadership — and, hence, standards — is the fundamental reason CIO positions flourish.

In my view, the essential reason for establishing a CIO position is to create standards higher than that of the current organization. The enforcement of mediocre standards is just as damning as a lack of standards. Doing things better is not the same as doing better things. And there are a great many "better things" MIS organizations need to be doing.

Leaders, MIS style

MIS leadership requires a set of specialized skills. Generalized educational approaches aimed at the mass production of managers fail to recognize that not all leadership styles can effectively establish MIS standards and leading MIS professionals.

In general, there are three fundamental mistakes a would-be MIS leader can make as he begins to create desirable standards for business performance:

• Isolation. A would-be leader must maintain regular, if not frequent, contact with a significant percentage of the personnel he manages. And yet, typical criticism of MIS professionals centers on their preoccupation with technology, their inability to see the big picture and their fondness for tasks rather than a genuine interest in the organization.

• Inability to reward. MIS managers who lack the ability or do not take the time to reward are never able to build employee commitment. When performance is measured against possibility, extraordinary rewards are warranted.

• Lack of business perspective. Business perspective is the ability to take advantage of opportunities, articulate goals, effectively deploy resources, take risks and accept responsibility for the outcome of actions. Business perspective also involves strict attention to costs.

Unfortunately, many MIS organizations are contributing more to overhead than to the bottom line by performing activities in which there are no tangible payoffs, short- or long-term.

Best foot forward

Clarity, vision and even intuition are all useful traits for MIS leaders. However, executive demeanor is perhaps the most basic and most necessary element of business perspective.

Classically, executive demeanor begins with a question:

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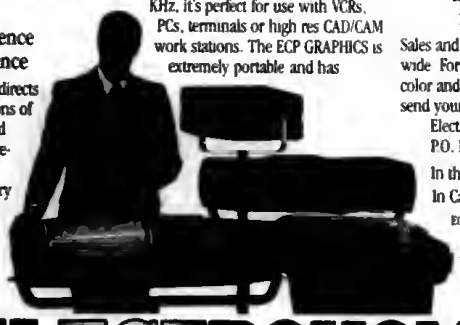

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What business are we in, and where does MIS fit in? It ends with the unique contributions to the business. Further, because business situations are often intimidating, mental toughness is absolutely essential.

What message should CIOs take to MIS managers? Three ideas top the bill:

- A renewed interest in your employees will make the company more profitable.
- Active participation in the business is mandatory.
- If you cannot actively contribute to the business, your future within the organization is limited.

No man is an island

Interpersonal relationships are fundamental to the success of any information system and to the MIS function itself. Even the most technologically preoccupied staff members respond to praise and promotion. Technical gurus need to know that their personal and professional behavior has consequences — positive or negative.

As for active participation in the business, the economic performance of the organization is simply too important to be left to the first and second lieutenants. Participative approaches to management dilute the importance of top-down leadership.

World-class performance is not necessarily arrived at by consensus decision-making. Such performance often originates in the vision of one person who is able to solicit the contributions of others. Leadership does not have to be warm, participative or nurturing to be effective. A leader can be cold, calculating and aloof; however, he must be clearly understood.

Leaders supply the push to the organization through style, consistency and contact. Top managers who lack visibility usually also lack vision. Vision and direction do not typically emanate from the lower levels of the organization.

Given the current industry-wide emphasis on fewer managerial levels, leadership within the MIS function has become even more important. Quality and cost-effective operations are possible only through a disciplined examination of administrative systems and objectives. Unfortunately, a lesser level of participation is as typical as it is ineffectual.

Stateside

The battle for global market share is a contest of leadership. In America, sociologists report that workers are not very satisfied with their jobs. A 1984 study by the Public Agenda Foundation in New York shows that, because of ineffective management, only 23% of the nation's employees are working to their potential.

Working beneath their potential, most MIS employees are not superstars. Yet, most U.S. workers are dependable and competent. They do not create trouble, and they are valuable, partly because they are essentially interchangeable with a great percentage of other MIS workers.

Unfortunately, for many organizations, today's managers are not tomorrow's top leaders. They are not necessarily capable of providing the image, pace, priorities and rewards required to cultivate sustained high performance.

This year, businesses are populated by the most educated and able work force in history, and in most companies, investments in technology are staggering. Yet sustained superior performance is rarely achieved.

Business goals are ultimately obtained solely through the efforts of human beings, but, based on current MIS return on investment, one must conclude that a sizable segment of management does not understand this.

Leadership has to do with vision and a realistic knowledge of human resources. Standards are actually nothing less than a leader's expectations of excellence.

MIS organizations must seize a leadership role beyond the mere control of equipment and technical personnel.

In the coming years, MIS leadership should focus on results. There is only one reason to have a CIO position, and it is the one that makes the other executive positions critical: to make the business more profitable, not more fashionable. •

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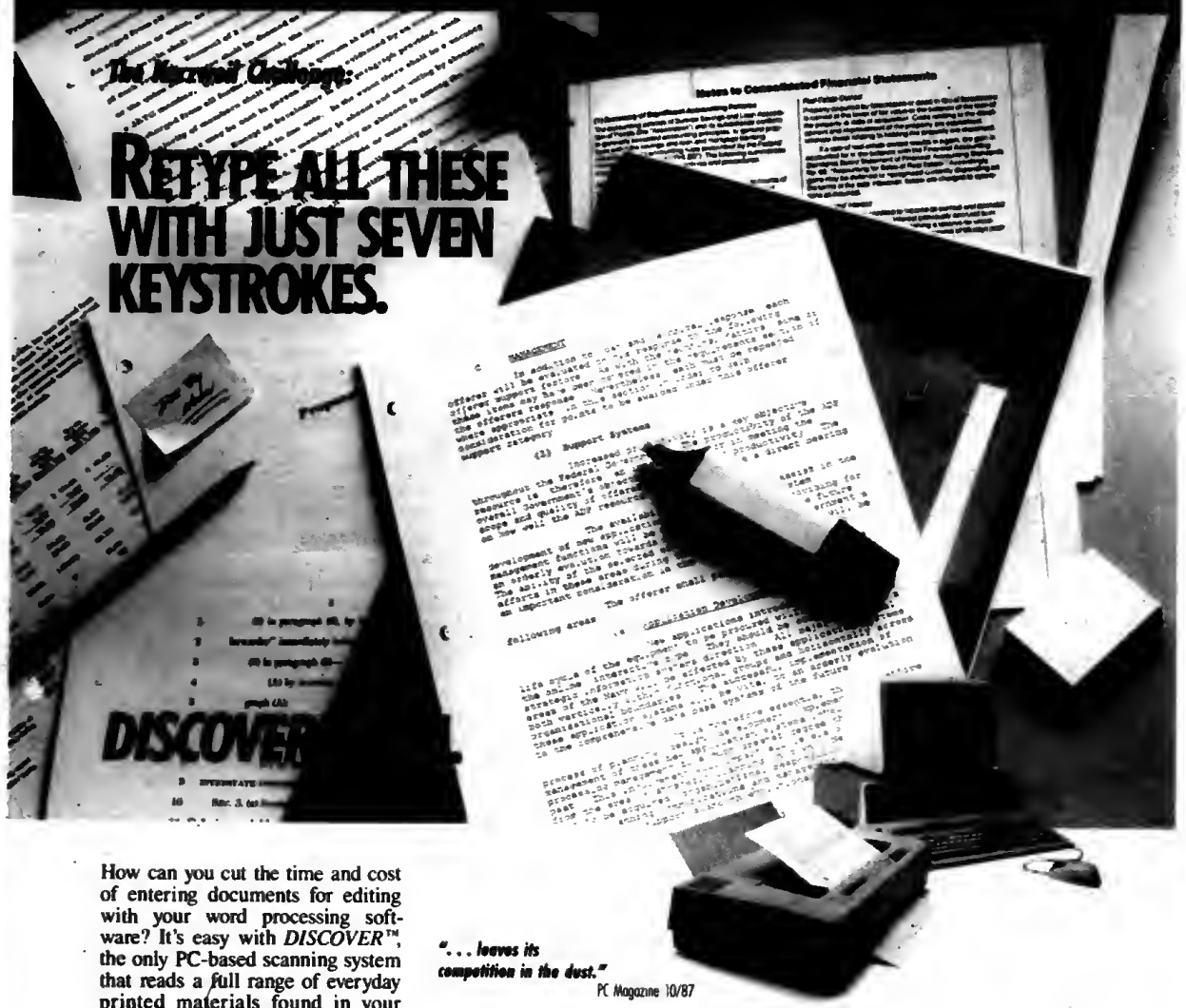

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MANAGEMENT

TAKING CHARGE

Anthony Reed

Programmer life cycle

Programmers, like systems, go through a life cycle. It begins during college and ends with retirement. The shape and direction of a system change during development, stabilize during maintenance and become obsolete during retirement, and so does a programmer during this 11-phase life cycle:

1. The Great Expectation Phase. This phase occurs during a college student's senior year. He dreams of owning a sports car, living in a singles-only apartment complex, going to all the happy hours and traveling around the world on a three-week vacation during the first year of employment. Expectations grow with each interview and job offer, and the student cannot wait to graduate to that high-paying, secure technical job.

2. The Rookie Phase. The student graduates from college and is prepared for some real partying and working. However, he soon realizes that partying is difficult between 60-hour workweeks and 24-hour production support. But the company encourages the long hours by promising a promotion, pay increases and an off-site user meeting in an exotic place. A year — and no vacations — later, the promotion from trainee to programmer and a raise are approved.

3. The JINK (Joint Income, No Kids) Phase. Somehow, the programmer finds time to get married. As the long

Continued on page 102

Exchange exec bullish — on foreign links

BY JEAN S. BOZMAN
CW STAFF

CHICAGO — When Mary Jo Moccia came to the Midwest Stock Exchange in 1972, shares were traded manually and computers were used only to clear trades and handle back-office operations.

At the exchange, Moccia was asked to write business applications, which she had previously done at Air Products and Chemicals, Inc. A Chicago native who studied art in college and originally planned a career in mathematics, she had earlier turned to systems analysis as a practical vocation at American Hospital Supply Corp.

Within a few years, however, Moccia decided to tackle the task of automating the Midwest exchange, where the processing volume is second among U.S. stock exchanges to the joint operations of the New York and American exchanges. She became part of a team that was able to convince Midwest exchange management that automation would bring substantial growth to its business.

Automation, through the addition of Digital Equipment Corp. VAX machines in the early 1980s, allowed the volume of trading to reach 16 million shares a day on the floor (with another 12 million handled over the counter) — a few times more than what it had been a decade earlier.

Worked under pressure

With its current, flexible architecture of DEC and Tandem Computers, Inc. processors, the exchange withstood a volume of 26 million shares during last month's stock market turmoil, thanks in part to the addition of extra processors and disk drives two days after the Dow Jones industrial average's one-day 508-point plunge.

Along the way to automation, Moccia fostered a team approach that led to low turnover in the computer operations and programming staff and created an enhanced trading system in the mid-1980s. The system, MAX, supports the exchange's trading floor with an order-entry and real-time transaction system. A historical data base of all sales and issues, including the time of trade, is maintained on an Oracle Corp. relational data base management system running on DEC machines.

Today, as vice-president for the exchange's Systems Group, Moccia, 52, is still addressing business problems with software. The software is MAX, and the challenge is gaining new business opportunities with other exchanges by transferring some of MAX's technology. Currently, Moccia is helping the Midwest exchange forge electronic links with exchanges in

Continued on page 95

PROFILE

Mary Jo Moccia

Position: *Vice-president, Systems Group, Midwest Stock Exchange.*

Mission: *Overseeing operations and helping expand business by forging electronic links with foreign exchanges.*

Data View

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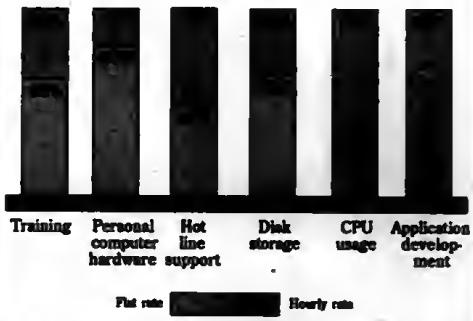
*Method of chargeback used among information centers in large organizations**



* Of 450 centers surveyed, 28% reported using chargebacks

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Red Cross MIS seeks infusion of training

BY JAMES A. MARTIN
CW STAFF

BURLINGAME, Calif. — Staff members and volunteers from the far-flung chapters of the American National Red Cross met here recently to discuss MIS challenges they share, such as training field staff and improving communication among local offices.

With some 3,000 local chapters in the U.S., all of which are responsible for their own information systems, some of the issues taken up at the meeting are common to many decentralized MIS operations.

But some of the problems are not so common. The headquarters in Washington, D.C., has 86 data processing and MIS employees providing chapters with telephone support and help in procuring equipment. As a nonprofit organization, however, the Red Cross has few, if any, highly trained support staffers in the field, a problem aggravated by the lack of communication among chapters on how to solve common technology-related problems.

"We want to build a stronger

Continued on page 99

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LOCAL HAPPENINGS

NORTHEAST

Randolph, Mass., Nov. 10. EDP Auditors Association, New England Chapter. Application Controls, with Karen Karlsen of Coopers & Lybrand, and On-line Financial System — MMARS, with Ellen O'Connor, Comptroller of the Commonwealth of Massachusetts. Lantana, 43 Scanlon Drive. 2:30 and 5:00 p.m. Contact: EDPAA, P.O. Box 516, Boston, Mass. 02102.

Northport, N.Y., Nov. 10. Data Processing Management Association (DPMA), Suffolk County Chapter. The System/38. Windjammer Restaurant, Rt. 25A. 6 p.m. Contact: Monika MacLean, 257 Depot Road, Huntington Station, N.Y. 11746.

New Cumberland, Pa., Nov. 11. Association for Systems Management (ASM), Central Pennsylvania Chapter. Artificial Intelligence, with Jack Barr of Cullinet Software, Inc., and The Oasis Message Processing System, with Jim Lightly of Pennsylvania Blue Shield. Sheraton West. 5:30 p.m. Contact: Mark Anderson, 809 Acri Road, Mechanicsburg, Pa. 17055.

Boston, Nov. 10. DPMA, Boston Chapter. Gwen Bell, founding president of The Computer Museum, The Computer Museum, 300 Congress St. 5:30 p.m. Contact: DPMA, P.O. Box 1806, Boston, Mass. 02105.

Westbrook, Maine, Nov. 18. DPMA, Maine Pine Tree Chapter. Achieving Personal Excellence, with Molly Marley. Verillo's. 5 p.m. Contact: Delta Chemicals, Inc., Searsport, Maine 04974.

Boston, Nov. 19. Society for Information Management, Boston Chapter. The Organizational Impact of New Technologies, with Raymond J. Epich of The Diebold Group, Inc. Anthony's Pier 4. Contact: SIM, P.O. Box 116, Newton Lower Falls, Mass. 02162.

Boston, Nov. 20. Society for the Management of Professional Computing. Member Panel on IC Experiences, with Ed Goudette of Norton Co. Anthony's Pier 4. 11:45 a.m. Contact: SMPC, 715 Boylston St., Boston, Mass. 02116.

SOUTHEAST

Chamblee, Ga., Nov. 10. ASM, Atlanta Chapter. Artificial Intelligence, with William Underwood of AI-Atlanta. Holiday Inn Chamblee-Dunwoody, 4386 Chamblee-Dunwoody Road. Contact: Jane Roberts, HBO & Co., 1 Ravinia Drive, Atlanta, Ga. 30346.

Charlotte, N.C., Nov. 19. ASM, Queen City Chapter. The Leader Manager, with Steven C. Slater of Wilson Learning Corp. Cosmos Steak House, 5100 E. Independence Blvd. 6 p.m. Contact: Robert Yearwood, Metro Information Services, Suite 140, 7 Parkway Plaza, Charlotte, N.C. 28217.

Lafayette, La., Nov. 19. DPMA, Acadiana Chapter. Monthly meeting. Evangeline Steak House, Highway 167 S. 6:30 p.m. Contact: Debra Billeaud, Guaranty Bank and Trust Co., Fourth Plaza, 200 W. Congress St., Lafayette, La. 70502.

MIDWEST

Des Moines, Iowa, Nov. 9. ASM, Des Moines Chapter. Evolving Role of DP Professionals, with Robert Rouse of Washington University. The Howard Johnson Inn, Merle Hay Road. 5 p.m. Contact: Joleen Montag, Integrated Resources Life Insurance Co., 3737 Westown Pkwy., West Des Moines, Iowa 50265.

Lafayette, Ind., Nov. 12. DPMA, Sagamore Chapter. Certification for the Computer Professional, with George Eggert. Judith Painter Catering, 101 Plaza Lane. 5:30 p.m. Contact: Joan Vaughan, MIS Department, Aluminum Co. of America, Box 7500, Lafayette, Ind. 47902.

Kalamazoo, Mich., Nov. 16. DPMA, Southwestern Michigan Chapter. Personal Communication — The Key to Success, with Hugh Brown of The Upjohn Co. The Black Swan Restaurant. 6:30 p.m. Contact: William Hosken, Upjohn, 7171 Portage Road, Kalamazoo, Mich. 49001

Dayton, Ohio, Nov. 17. ASM, Megacity Chapter. System Development, with Walter Moody. Dayton Marriott, 1414 S. Patterson Blvd. 5:30 p.m. Contact: S. Beebe-Owen, Western Ohio Pizza, Inc., 2324 Stanley Ave., Dayton, Ohio 45404.

Fort Wayne, Ind., Nov. 17. ASM, Fort Wayne Chapter. A View from the Top, with Robert Sanders of Phelps Dodge and Robert Kostrubanc of Tolthem. Lester's, 1502 Bluffton Road. Contact: Beth Hukill, ASM, Suite 103, 10427 Lee Road, Fort Wayne, Ind. 46825.

Toledo, Ohio, Nov. 18. ASM, Toledo Chapter. The Competitive Edge, with Fred Bollin of Arthur Young. The Carranor Hunt & Polo Club. 5:30 p.m. Contact: Dale R. Briggs, Systems Development Division, Marathon Oil Co., 539 S. Main St., Findlay, Ohio 45840

Overland Park, Kan., Nov. 19. DPMA and ASM, Kansas City Chapters. Employing Expert Systems to Gain Competitive Advantage, with Robert J. Benson and Robert Rouse. Marriott Hotel, 10800 Metcalf Ave. 7:30 a.m. Contact: Jon Miegs, DPMA, P.O. Box 2425, Kansas City, Mo. 64142.

Indianapolis, Dec. 3. ASM, Indiana Chapter. Joint meeting with EDP Auditors Association: The Fraud and Abuse of Computers Today, with speaker from the U.S. Secret Service. Holiday Inn Southeast, Interstate 465 and Emerson Ave. 6 p.m. Contact: Lloyd Louks, ASM, Banc One Indiana, 450 E. Washington St., Indianapolis, Ind. 46277.

WEST

Los Angeles, Nov. 9. DPMA, Los Angeles Chapter. Software Selection, with Peter Hutto of Unisys Corp. Taix Restaurant. 6 p.m. Contact: DPMA, P.O. Box 1947, Hollywood, Calif. 90078.

Stockton, Calif., Nov. 10. DPMA, Central Valley Chapter. "Sex, Technical Writing, and You," with Susan DuMond, Prime Rib Inn, 1025 Robinhood. 7 p.m. Contact: Bob Lombardi, DPMA, P.O. Box 4123, Stockton, Calif. 95204.

Santa Ana, Calif., Nov. 11. DPMA, Orange Coast Chapter. 25th Anniversary Banquet. Contact: DPMA, P.O. Box 26093, Santa Ana, Calif. 92799.

Walnut Creek, Calif., Nov. 18. ASM, East Bay Chapter. Monthly meeting. Contact: ASM, 32 Robert Road, Orinda, Calif. 94563.

Oakland, Calif., Nov. 19. Association for Computing Machinery, Golden Gate Chapter. Monthly meeting. El Caballo, 67 Jack London Sq. 5:30 p.m. Contact: ACM, Box 26044, San Francisco, Calif. 94126.

San Francisco, Dec. 2. Association for Women in Computing, Bay Area Chapter. Why People Have Problems Using Software, with Bob Stahl of The Interface Design Group. The Fax Restaurant, 132 Bush St. 5:30 p.m. Contact: AWC, Suite 1044, 41 Sutter St., San Francisco, Calif. 94104.

CANADA

Kitchener, Ont., Nov.16. ASM, Conestoga Chapter. Integrating Users & Systems People, with John Herzog, ASM president-elect. The Conestoga Inn. 6 p.m. Contact: Rich Clemmer, 49 Industrial Drive, Elmira, Ont., Canada N3B 3B1.

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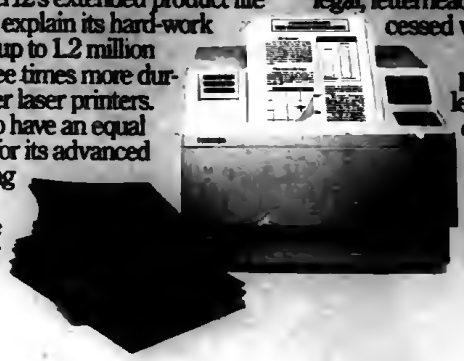

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MANAGERS ON THE MOVE

Barnes named Pension CIO

Janet L. Barnes has been named director of information resources management and chief information officer at **Pension Benefit Guaranty Corp.**

She previously was a vice-president at consulting firm Massie Information Systems, Ltd. and director of systems development at MCI Communications Corp.

John Highbarger, previously director of MIS for Diamond Shamrock Corp., has joined the accounting and consulting firm **Coopers & Lybrand**, where he will be responsible for information management services.

Christopher J. Egger has been appointed assistant director of the hardware division at the **Internal Revenue Service**.

He succeeds **Ludwig G. Kuttner**, who was named director of the division.

John E. Dyble has been appointed director of corporate information systems at **GATX Corp.**, a leasing, finance, storage and shipping firm.

Lawrence W. Pauling has been named manager of data support systems for the **Aerospace Industries Association.**

He joins Aerospace Industries from PSI, Inc. International, where he managed a project to analyze, implement and administer Xenix operating systems in U.S. prisons.

Robert H. Davis, whose previous positions include director of corporate systems at American Express Co. and several positions with J. Walter Thompson Co., has been named MIS director at **Franciscan Health System** in Chadds Ford, Pa.

Codenoll Technology Corp., a manufacturer of fiber-optic local-area network communications systems and components, has appointed **Erdwin Chua** manager of management information systems.

Exchange exec

CONTINUED FROM PAGE 91

Toronto, London and Amsterdam.

To enable her to focus on business issues, she has delegated to others much of the day-to-day operation of the computers, which include 11 Tandem processors to execute trading, an IBM 3081 to handle back-office processing, an IBM System/88 for new development, five VAXs and 20 DEC Microvax II machines.

As the exchange's reliance on computers grew in the 1980s, so did Moccia's influence on its business, says Charles Doherty, president of the exchange. "We give Mary Jo a major share of the credit in making the Midwest Stock Exchange's business what it is today," he says. "Not every technician can step up to the business side as she has done. It's one thing to develop a system, and it's quite another to create practical business applications for that system."

'Leads by example'

Doherty says he believes Moccia's approach to business is coupled with a natural ability to lead the 70 programmers and 30 operations personnel on her systems staff. "She leads by personal example," he says. "She does a good, professional job, and she works very hard. That has led to an atmosphere in which people on her staff are trying to do their best."

Co-workers agree, although they point out that Moccia sets high standards of performance. "I feel that she's demanding," a longtime associate says. "But I also feel that she treats her people very fairly. You can talk to her about anything. For many people, she's not only the boss, she's also a friend and a mentor."

Moccia explains her rapport with the staff as a natural extension of her management philosophy. "I make sure the structure is loose enough to allow the creativity," she says in an interview, "but structured enough to allow the programmers to work together as a team."

Allowing people to be creative helps the exchange avoid inflexible rules about programming, although it does not excuse sloppy coding. "My people know they have the opportunity to move up, and I encourage them to move to different work groups if they can, so they can get a well-rounded background," Moccia says.

Several weeks ago, Moccia made her eighth visit to Amsterdam to help troubleshoot the installation of some VAX computers at the Amsterdam stock exchange. Moccia, who rarely travels, saw the need to be there in person, and her Dutch colleague, Johan Kooy, agreed.

"Mary Jo was highly involved in convincing us to choose the Midwest Stock Exchange technology," says Kooy, who is managing director of information systems for the Amsterdam exchange. "She is a highly professional, energetic person who has a natural enthusiasm she brings out in others." In part, it was Moccia's enthusiasm, Kooy says, that convinced him that the Amsterdam exchange would profit by adopting the Midwest exchange's commitment to DEC computers.

The impact of Moccia's enthusiasm on her staff is also evident. "The atmosphere here could have been very political if someone else had been in charge," one exchange staffer says. "But she's prevented that from happening. By and large, she has created a positive environment in which people can enjoy their job."

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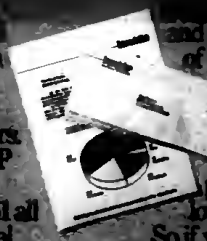

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Red Cross MIS

CONTINUED FROM PAGE 91

Red Cross through MIS," said Keith O. St. Clare, manager of information services for the Berkeley, Calif.-based chapter and a key organizer of the recent meeting, which was the first of its kind and drew about 100 staff members and volunteers.

"Communications among those on the line is not as good as it could be. We share problems, but we have a tendency not to share solutions. That's what this forum is about," St. Clare said.

For many years, the Red Cross did not automate because officials said they felt it would be too expensive. "The truth is, we couldn't afford not to automate," said Richard F. Schubert, Red Cross president, in a videotaped address to the conference.

Schubert took office in 1983 and was instrumental in automating the Red Cross, stressing the need for standardization throughout the organization. Microcomputers, particularly IBM's Personal Computer and Personal System/2 series, were chosen as the standard processing vehicles; the main requirements for most chapters focused on word processing and spreadsheet applications.

Many of the 1,000 to 1,500 microcomputers installed throughout the chapters are linked by IBM's Token-Ring local-area network for data and peripheral sharing.

Aside from the need for dialogue, additional systems training for staff and volunteers is crucial before the organization's MIS strategies can progress further.

For example, there are plans to link microcomputers at local chapters directly with the Red Cross emergency network system, which tracks disaster needs, refugee relocations and the like around the world. For now, however, that system is accessed by 3M Co.'a Whisper Writer and Whisper Screen terminals until end users gain a higher degree of sophistication, according to Charles G. Blake, vice-president of Corporate Management Information Systems.

The national Red Cross headquarters and several of its chapters have their own MIS steering committees, composed of seasoned DP professionals who advise and develop strategies around technology issues on a volunteer basis. On a more technical level, many of a chapter's specific programming needs are handled by volunteers.

William A. Fisher, special programs coordinator for the Santa Clara Valley Red Cross chapter, is a former IBM manufacturing executive in San Jose, Calif., who retired four years ago. Fisher devotes about 20 hours per week to developing programs for the local chapter.

'Starting from scratch'

"I develop programs that result in getting the statistics we need to compile a history of disaster operations for future planning purposes," Fisher said. "We're pretty much starting from scratch to automate this chapter."

Most steering committees meet each quarter and consist of six to 10 members. "Our role is to support the technology policies laid out by the Red Cross Board of Governors in developing and implementing systems," said Dr. Scott N. Swisher, professor of medicine at Michigan State University and chairman of the national MIS steering committee.

The Red Cross's emphasis on microcomputers may be unusual for corporations of a similar size — about 20,000 workers, most of them volunteers. But the goals are the same as any Fortune 500 firm. "The goal," Swisher said, "is to have high-quality information available and to improve our services and become more efficient."

CALENDAR

NOV 8-11

The Sixth International Conference on Entity-Relationship Approach. New York, Nov. 9-11 — Contact: Katie Hogshead Davis, Department of Computer Science, Northern Illinois University, DeKalb, Ill. 60115.

The Seybold Executive Forum: Visionary Management and Technology Directions in the Real World. Cambridge, Mass., Nov. 9-11 — Contact: Deborah Hay, Patricia Seybold's Office Computing Group, Suite 612, 148 State St., Boston, Mass. 02109.

The 14th Annual Computer Security Conference. Anaheim, Calif., Nov. 9-11 — Contact: Computer Security Institute, 360 Church St., Northboro, Mass. 01532.

Autofact '87 Conference and Exposition on the Automated, Integrated Factory. Detroit, Nov. 9-12 — Contact: Society of Manufacturing Engineers, P.O. Box 930, SME Drive, Dearborn, Mich. 48121.

CMC '87 Computer and Management Show for the Construction Industry. Chicago, Nov. 9-12 — Contact: Fleishman & O'Connor Communications, Inc., Suite 1090, 425 Martingale Road, Schaumburg, Ill. 60173.

Mapping & Geographic Information Systems '87. San Diego, Nov. 9-12 — Contact: National Computer Graphics Association, Suite 200, 2722 Merrilee Drive, Fairfax, Va. 22031.

California Computer & Business Show '87. Anaheim, Calif., Nov. 10-11 — Contact: Concept Productions, 27292 Calle Arroyo San Juan Capistrano, Calif. 92675.

Annual Conference of Expert Systems in Business. New York, Nov. 10-12 — Contact: Learned Information, 143 Old Marlton Pike, Medford, N.J. 08055.

Localnet '87. Los Angeles, Nov. 11-13 — Contact: Dawn Lancaster, Online International, Inc., 989 Avenue of the Americas, New York, N.Y. 10018.

Optical Publishing & Storage '87. New York, Nov. 11-13 — Contact: Learned Information, 143 Old Marlton Pike, Medford, N.J. 08055.

Forth National Convention. San Jose, Calif, Nov. 13-14 — Contact: Forth Interest Group, P.O. Box 8231, San Jose, Calif. 95155.

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Today's network manager must not only understand new technologies and standards, but must also play many roles in the company. Attend this instructive tutorial for an entertaining and thought-provoking look at what you need to know to be a successful network manager, plus the tools, processes and organization that will maximize your efficiency. **Level:** Intermediate.

T-6 THE LATEST LOOK AT NETWORK STANDARDS AND OSI

Richard deJardins, Director of Technology R&D, Computer Technology Associates Inc.

As OSI and the older standards are reaching maturity, numerous new standards are in the works. Attend this intensive session for a look at the new generation of standards — including their purpose, significance, applications, and technical elements. **Level:** Introductory.

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Dr. Wushow Chou, Professor of Computer Science and Electrical and Computer Engineering, North Carolina State University

Enroll in this tutorial for detailed instructions on how to design integrated networks. You'll learn about combining voice and data on a single architecture to maximize the efficiencies of wideband services, the migration from classical multipoint to distributed systems, plus cost-efficiency issues and other practical considerations. **Level:** Advanced.

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Atul Kapoor, Vice President, Kaptronix Inc.

This tutorial gives you a thorough and comprehensive introduction to IBM's NetView and NetView/PC — their operation, technical specs, dependencies and functional interactions, plus an analysis of their impact on the industry, significance for users, and practical suggestions for implementation. **Level:** Intermediate.

T-9 OPEN NETWORK ARCHITECTURE: CARRIER/VENDOR/USER IMPLICATIONS

Haines Gaffner, President, LINK Resources Corp.

The FCC has ordered AT&T and the RBOCs to adopt ONA to stimulate competition in enhanced data processing services over public switched networks. Enroll in this tutorial to learn the details of the ruling, its implications for service offerings and an overview of who the players will be. **Level:** Intermediate.

T-10 INTERNATIONAL NETWORKS: SOLVING THE PRACTICAL PROBLEMS

Len Elfenbein, President, Telcom Systems Group

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Richard E. Wiley, Senior Partner, Wiley, Rein & Fielding

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T-13 INTRODUCTION TO DATA COMMUNICATIONS
Gary Audin, President, Delphi Inc.

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T-14 INTRODUCTION TO VOICE COMMUNICATIONS AND PBX
James Morgan, Principal, J.H. Morgan Consultants

Enroll in this full-day tutorial for a comprehensive foundation in the basics of voice communications — technology, PBX characteristics, switched networks, tariffs and services, as well as an overview of traffic engineering. **Level:** Introductory.

T-15 IMPACT OF THE NEW POST-DIVESTITURE TARIFFS ON LARGE NETWORKS
Robert L. Ellis, President, The Aries Group

In this intensive tutorial you will learn the structure of the post-divestiture tariffs, the latest January 1988 changes to these tariffs, how to price interstate private lines, how to configure and price interstate FX services, the new economics in configuring data networks, the LATA-pure strategy and federal access tariffs and how to use them. **Level:** Intermediate.

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Programmer

CONTINUED FROM PAGE 91

work hours continue, the spouse becomes a "computer widow(er)." At first, as the programmer learns that overtime pay is nonexistent, he feels pressure to change jobs. However, he feels that another promotion is around the corner, so he decides to stay a little longer.

4. The Bunny Phase. After a couple of years and several hundred unsolicited calls from recruiters, the programmer becomes a job hopper. He wants enough "hush money" to keep the spouse quiet. Since there are relatively few financial responsibilities, he might even change cities or buy that expensive two-seater roadster. If he is lucky — or unlucky depending on the point of view — he will go through the next phase without any problems.

5. The Baby Phase. As you guess from the title, there is now another mouth to feed. The singles apartment and roadster quickly become overcrowded. The programmer pays to break the apartment lease, buy a house and furnishings and trade in the roadster for a four-door sedan. He manages to reduce his work hours so he can spend peaceful evenings at home. However, the peacefulness is short-lived as users, spouse and baby scream for more attention. Thanks to modern technology, the programmer is able to keep everyone happy.

SOMEHOW, THE programmer has changed companies three or four times and gets promoted to analyst. He worries about company mergers, hostile takeovers, work force reductions, foreign competitors and bankruptcies. Priorities change from more money to better benefits and job security.

6. The PC-at-Home Phase. The programmer buys a personal computer with a modem and musical chip. It allows him to watch the baby, submit compiles and play lullabies at the same time. If the spouse can tolerate a PC in the house, the programmer will go to the next phase. If not, they go through the Divorce Phase. (That is too messy to describe in this column, so just ask the person in the next office to tell you about his or hers.)

7. The Reality Phase. Somehow, the programmer has changed companies three or four times and gets promoted to analyst. He realizes that becoming vested in a pension plan is a dream and that his job is not very stable. He worries about company mergers, hostile takeovers, work force reductions, foreign competitors and bankruptcies. Priorities change from more money to better benefits and job security. He wants a 401K plan, IRA plan, five-year vesting program, employer matching of savings, better insurance, a credit union and longer vacations.

Now there are two children (after accidentally going through the Baby Phase again), a spouse, a mortgage company, finance companies and the government to financially support. Plus, the analyst has to save for retirement and the children's education. In this phase, he hoards money and tries not to "rock the boat" at work. If he is lucky, he will get promoted to project leader.

8. The "Chill Out" Phase. During this phase, the project leader decides to stay with the company until fully vested in all its pension and savings plans. Work is rather uneventful, so he "chills out" and "plays it cool." The emphasis is on saving money, attending school football games, paying for braces and staying one second ahead of the one-minute manager. He is learned enough about interoffice politics to keep his nose clean and get promoted to manager.

9. The Old Head/New Generation Phase. The children are in college, the mortgage is paid off and life is beginning to stabilize. Unfortunately, the "New Generation" of analysts and technology threatens to replace the company's "Old Heads." Since those of the New Generation are workaholics (see the Rookie Phase for a quick reminder), they pressure the Old Heads to quit. But the Old Heads make too much money to easily change jobs and are a few years short of being fully vested. So they band together and fight the New Generation.

10. The Consultant Phase. The Old Head manager now has the look of a well-respected, experienced consultant. He is slightly gray, a little wrinkled and overweight. But most important, he is fully vested in the company's programs and financially stable. So he retires and becomes a consultant. He finds that consulting provides the opportunity to set a work schedule and pay scale that meets personal needs. He becomes a conference speaker, author and full-time or part-time college instructor. When he gets tired of the traveling and teaching, he moves to the final phase.

11. The Retirement Phase. Now he lives happily ever after while writing magazine articles and playing lullabies on the PC for the New Generation grandchildren.

Reed is an internal quality assurance consultant for a major bank in Dallas.

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COMPUTER INDUSTRY

INDUSTRY INSIGHT

Clinton Wilder

Renewed hostilities

With the exception of the occasional high-tech forays of Asher Edelman and the Sperry checkmate engineered by grandmaster Mike Blumenthal, the computer industry has been a relatively infertile ground for hostile takeovers.

There are a host of reasons for this, but most stem from the fact that a high-tech firm's assets are often more intellectual than physical. The "our assets walk out the door every day at 5 p.m." corporate culture is a tough nut to crack for the market valuation formulas of a Carl Icahn or a T. Boone Pickens. The consensus thinking — although it has been disproved in some cases — is that after an ugly takeover battle, the best minds of the acquisition target will bolt the company and deprive it of the competitive value that the acquirer was seeking in the first place.

But all of this may be changing fast. There are currently three hostile takeover battles raging in the industry, and the most prominent one may be a disturbing portent of what the postcrash stock market has in store for high tech.

The data communications industry has been consolidating faster than most, but until last week, its mergers and acquisitions were mainly civilized affairs. Recent interviews with executives from firms bought by Digital Communications Associates (DCA), for example, revealed universal praise for how DCA folded their companies into the corporate structure and enhanced their financial resources.

So it was ironic when DCA turned corporate raider during the weekend of Oct. 24 and announced a $175 million acquisition bid for local-area network veteran Ungermann-Bass. While the financial world was watching to see what the Icahns and Pickens' would try to pillage from the ruins of the fallen stock market, DCA launched the first post-crash takeover bid.

That precedent was not lost

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CBEMA: U.S. edge well-honed

Study refutes 'weak' rap, says high-tech world market share up since '82

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — The Computer and Business Equipment Manufacturers Association (CBEMA) released a study recently that is intended to refute the notion that U.S. companies are losing their competitive edge in the world information technology marketplace.

The study found that U.S. companies' share of the world market for computers and business and telecommunications equipment increased slightly — from 35.1% to 35.8% — between 1982 and this year.

"The big news is that our companies are not only increasing their revenues, they are also increasing market share," said Oliver Smoot, the trade association's acting president.

The Global Market Analysis Project study was prepared by CBEMA and the Center for Economic Analysis, Inc. in Stamford, Conn.

CBEMA is concerned that the public — particularly members of the U.S. Congress — will get the wrong impression from trade statistics that show that U.S. exports of information technology equipment are down, while imports are up.

Imports up, exports down

U.S. exports of information technology equipment dropped from 32% of the world total in 1982 to 26.5% this year. During the same period, U.S. imports increased dramatically from 15.6% to 27.2%.

"On the surface, with export shares decreasing and import shares increasing, it looks as if U.S. companies are losing their competitive edge," the study said.

However, the study reported that there has been a slight uptick in U.S. companies' share of the world market for information technology equipment, as measured by revenues from equipment sales.

U.S. companies' worldwide revenues for information technology equipment increased by an average of 9.1% per year between 1982 and this year, while the world market increased an average of 8.6% per year for that time frame.

"Thus, U.S. companies' share of world markets increased slightly, from $35.1% in 1982 to 35.8% in 1987, demonstrating a gain of international competitiveness, not a loss as implied by domestic production

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Holding our own

World market share for sales of computer, business and telecommunications equipment

INFORMATION PROVIDED BY COMPUTER AND BUSINESS EQUIPMENT MANUFACTURERS ASSOCIATION
CW CHART

Compaq earnings skyrocket

BY ED SCANNELL
CW STAFF

HOUSTON — Compaq Computer Corp. took another giant step toward becoming a $1-billion company last week when it announced impressive revenue and earnings gains for the third quarter.

Compaq reported sales for the quarter of $313 million, a 113% gain over the $147 million reported for the same period last year. The company's earnings skyrocketed 319% to $36 million, compared with $9 million for the corresponding period last year.

Sales for the nine-month period were $792 million, compared with $438 million for the same period last year. If seasonal microcomputer sales trends hold up to produce a strong fourth quarter, Compaq will become the third vendor to record $1 billion in annual revenue from mi-

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Inside

- Storage vendors' finances are not as bad as they seem. Page 104.
- Hayes, U.S. Robotics settle modem suit. Page 105.
- EDS profits rise 16% for quarter. Page 106.

Leasing firm lowers takeover bid

BY CLINTON WILDER
CW STAFF

PARIS — Computer leasing firm Econocom International N.V. renewed its efforts for a takeover of Decision Industries Corp. (DIC) last week, but at approximately half the price that it first offered.

In the wake of plummeting stock prices, Econocom dropped its tender offer from $11 per share to $6 per share, changing the total value of the offer from approximately $103.6 million to $56.5 million. DIC's common stock closed at 5½ on the New York Stock Exchange last Wednesday.

An Econocom spokesman said the leasing firm, through its Memphis-based subsidiary Econocom-USA, Inc., now owns 23% of DIC shares, up from 13.8% when Econocom launched its initial takeover bid Sept. 30.

Horsham, Pa.-based DIC had not responded to the new lower offer by press time last week.

Execucom said its offer, executed through subsidiary Econocom Finance N.V., will expire Nov. 27.

DIC is the parent company formed earlier this year by Decision Data Computer Corp., a maker of IBM-compatible peripherals for IBM System/34, 36 and 38 users. DIC's other units include Decision Data Service Corp. and two subsidiaries that sell turnkey systems to the beverage and restaurant industries. Formed in 1969 as Decision Data, DIC currently employs 1,600 people and had 1986 sales of $195 million.

Econocom, one of the largest computer lessors in Europe, specializes in the leasing of System/34, 36 and 38 equipment and has annual revenue of more than $600 million.

If the takeover is successful, it may spell the end of DIC's Decision-36 CPU, the industry's first System/36-compatible central processor. European analysts speculate that Econocom Chairman Jean-Louis Bouchard will kill the product if his bid succeeds, concentrating instead on reinforcing Econocom's position in the U.S. through DIC's distribution network.

In his Sept. 30 letter to DIC announcing the bid, Bouchard noted DIC's "much delayed commercial introduction of the Decision-36 processor product." Announced last year, the product had software problems that have delayed volume shipments, a DIC spokesman said.

"For the moment," said Econocom Vice-President Jacques Collin in an interview, "the market is not the most favorable for this type of product." He stressed that this was a personal view and that Econocom wished "to go further in the analysis of the reality of DIC."

An attractive offer?

While analysts said that DIC's successful peripherals business could be attractive to Econocom, they suggested that the Decision-36 CPU might be less enticing. Analysts also said that Econocom may fear that the System/36 faces an uncertain future because of IBM's plans to introduce in mid-1988 its so-called Silverlake product as a follow-up to the currently incompatible System/36 and 38 product lines.

Collin added that DIC could

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Storage vendors' incomes down, revenues up

BY JAMES A. MARTIN
CW STAFF

Although five companies in various segments of the computer storage industry reported declining net incomes in the quarter ended Sept. 30, analysts said the figures did not indicate an overall industry downturn.

Maxtor Corp., Quantum Corp., Priam Corp., Iomega Corp. and Cipher Data Products, Inc. each reported disappointing earnings, with Priam and Iomega reporting net losses. All five, however, said revenue had increased, and several reported record sales quarters.

"They are all major players, and you can't neglect what'a happening to them," said Robert Abraham, vice-president of Freeman Associates, a disk storage consulting firm in Santa Barbara, Calif. "But I wouldn't extract a trend, because in each area, you can find the opposite occurring as well."

For example, while Maxtor and Quantum had disappointing earnings this quarter, competitors such as Micropolis Corp. have recently reported revenue increases, Abraham said.

Money well spent

In addition, these companies are currently involved in strong research and development efforts. "They're spending a lot of money for the right reasons, trying to position themselves for future growth, and that affects earnings," Abraham said. "If these companies weren't spending money on R&D and they were still losing money, then there would be cause for alarm."

Storage products vendors "are doing a marvelous job at keeping themselves healthy, and these reports are not indicative of any lingering illness," said James N. Porter, president of Disk/Trend, Inc., a storage consulting firm in Mountain View, Calif.

The income drops are partly explained by product transitions, Porter added. "Iomega, for example, is in a transition phase from 8-in. hard disks to 5¼-in. products, and they've been late in making that transition, so they got caught in a squeeze. Quantum has had the same problem. They have a hot product, the Hardcard, through their subsidiary Plus Development Corp., but their older OEM disks are fading, and they are late in bringing out new ones."

Hard-disk and storage products typically have short life cycles, so the need to keep a flow of new products coming is especially important in this industry, Porter added.

Maxtor, based in San Jose, Calif., reported second-quarter 1988 revenue of $60.4 million, an increase of 45% over $41.7 million reported in the same quarter a year earlier. Net income was $1.2 million, or 6 cents per share, compared with $5.9 million, or 30 cents per share, last year.

Maxtor attributed the decline in income partly to difficulties in obtaining thin-film recording heads from Read-Rite Corp., formerly the company'a single source for those components. Maxtor officials said other suppliers have been signed and shortage problems should be curtailed soon.

Milpitas, Calif.-based Quantum had record second-quarter sales of $49.5 million, a 67% jump over the same period last year. Net income was $4.1 million, which included $3 million from the recent settlement of a

Continued on page 107

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Takeover bid

FROM PAGE 103

face patent infringement problems as it tries to ensure a supply of applications software to customers of its System/36-compatible systems. "IBM licenses its software to the System/3X customer," one analyst noted.

Italian computer vendor Ing. C. Olivetti & Co. also clouds the picture. Last year, it purchased a 51% share of DIC's European operations, then known as Decision Data. One analyst speculated that Olivetti might see the Decision-36 as an alternative to its Unix-based AT&T 3B minicomputer line. It is not clear what impact a successful bid by Econocom in the U.S. would have on Decision's Olivetti-controlled activities in Europe.

DIC rebuffed Econocom's original takeover bid the day after it was announced, describing the offer as "incompatible" with its strategic objectives. A week later, DIC filed a lawsuit against Bouchard and his firm, alleging that they had sought to manipulate DIC's stock price.

Amiel Kornel of the IDG News Service contributed to this story.

Hayes settles modem suit

BY JAMES A. MARTIN
CW STAFF

ATLANTA — Hayes Microcomputer Products, Inc. and U.S. Robotics, Inc. recently reached a settlement in an antitrust suit in which U.S. Robotics alleged that Hayes and Business Computer Corp., better known as Bizcomp, had conspired to monopolize the modem market.

Under the settlement, U.S. Robotics will license and pay royalties for Hayes' patented modem with improved escape-sequence technology. Additionally, U.S. Robotics agreed to pay all Hayes' attorney fees and expenses resulting from the litigation.

The settlement is the first action to result from a complex web of litigation and cross-litigation in the microcomputer modem industry.

Still unresolved, however, is related litigation between Prometheus, Inc. and Hayes; Bizcomp and Hayes; and U.S. Robotics and Bizcomp, with some cases expected to reach similar out-of-court settlements.

Long-standing battle

In 1983, Bizcomp received a patent for its autodialing technology, the validity of which was later challenged by competitors. Bizcomp licensed that technology to Hayes, and its patent was upheld in 1986 by the U.S. Patent Office.

In October 1985, Hayes received a U.S. patent for a technical code called "modem with improved escape sequence," based on the Bizcomp technology. The escape sequence is used in most Hayes and Hayes-compatible microcomputer modems, and Hayes began asking competitive modem vendors in late 1986 for a 2% royalty fee based on the net selling price of each unit that was sold.

U.S. Robotics and other modem vendors filed an antitrust suit against Bizcomp in February 1984, with U.S. Robotics adding Hayes to the suit in December 1986, shortly after Hayes began asking for royalties.

Under the terms of the settlement, Hayes and U.S. Robotics agreed to dismiss all claims filed against each other.

In addition, the two firms agreed to cross-license their existing patents and any patents issued on inventions in the next three years.

Under those terms, U.S. Robotics will pay royalties on products using Hayes patents and give Hayes royalty-free use of its patents.

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NICKELS & DIMES

Gould, Inc. announced revenue for the third quarter ended Sept. 30 of $230.4 million, compared with $227.4 million reported last year. The company reported earnings from continuing operations, before an extraordinary item, of $4.8 million, or 10 cents per share, compared with $4.3 million, or 10 cents per share, a year ago.

Computervision Corp. announced revenue for the third quarter ended Sept. 30 of $132.3 million, compared with $125.9 million a year ago. Profits were $1.5 million, or 5 cents per share, compared with $1.2 million, or 4 cents per share, in the same period last year.

Alliant Computer Systems Corp. reported revenue for the third quarter ended Sept. 30 of $14.2 million, compared with $8.6 million a year ago. Profits were $789,000, or 7 cents per share, compared with $1.3 million, or 15 cents per share, reported in the comparable period last year.

Convex Computer Corp. announced revenue for the third quarter ended Sept. 30 of $18.4 million, compared with $10.7 million last year. Profits were $2.2 million, or 12 cents per share, compared with $1.2 million, or 8 cents per share, in the like quarter a year ago.

Computer Consoles, Inc. announced revenue for the third quarter ended Sept. 30 of $37.8 million, compared with $34 million last year. Profits were $612,000, or 5 cents per share, compared with $1.6 million, or 13 cents per share, in the like period last year.

Sequent Computer Systems, Inc. reported revenue for the third quarter ended Oct. 3 of $9.8 million, compared with $5.6 million a year ago. Profits were $816,000, or 10 cents per share, compared with $201,000, or 4 cents per share, in the corresponding quarter last year.

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EDS profits increase 16%

DALLAS — Despite a drop in revenue reflecting the completion of two major contracts with parent firm General Motors Corp., Electronic Data Systems Corp. (EDS) last week reported a 16% rise in third-quarter profits.

EDS's revenue from GM contracts declined 16% from year-earlier levels to $720.5 million, while overall revenue slipped 2% to $1.13 billion. The company said revenue from outside accounts rose 35% to $373.5 million.

Earnings for the quarter ended Sept. 30 were $82.3 million, or 68 cents per share of GM Class E common stock, compared with $71.1 million, or 58 cents per share, a year earlier.

Banking project under way

In announcing its financial results, EDS issued a progress report on its project with two large Midwestern banks to develop a major retail bank processing system.

EDS said it completed the deposit and customer portions of the system during the third quarter. EDS's development partners are Banc One Corp. in Columbus, Ohio, and Norwest Corp. in Minneapolis.

EDS also noted the signing of three of its largest government contracts: a 12-year pact to revamp the U.S. Navy's inventory and supply system, a 9½-year deal to upgrade the U.S. Army's personnel records and a five-year agreement to process Medicaid claims for the State of California.

Compaq

CONTINUED FROM PAGE 103

crocomputer sales. IBM and Apple Computer, Inc. were the first.

Compaq's net income for the first nine months of this year was $87 million, compared with $27 million for the same period in 1986.

Included in the net income for both the third quarter and first nine-month period was a nonrecurring after-tax gain of approximately $3 million from an equity financing by Conner Peripherals, Inc. Conner is a disk drive manufacturer in which Compaq has an interest.

Upturn surprises

The company attributed the sharp upturn to the strong demand for its 12-MHz Deskpro 286 and Portable III systems. Compaq President Rod Canion said the strong showing of the two systems was a bit surprising given that it came during a traditionally slow period.

Another factor contributing to the upturn was the company's ability to ship in volume the Compaq 386/20 and Portable 386 systems it announced in late September. Compaq said it was able to meet demand quickly because of its expanded facilities in Singapore and the addition of more shifts and automated equipment to manufacturing plants in the U.S.

"The Compaq Portable III shortages vs. market demand eased considerably," Canion said in a statement. "The backlog on the Deskpro 286 and 386 will likely continue through the fourth quarter."

Storage vendors

CONTINUED FROM PAGE 104

patent infringement lawsuit against NEC Corp. After subtracting the settlement figure, however, Quantum's earnings were below the $2.7 million reported during the same quarter last year.

Quantum said sales in its Plus Development subsidiary were down from the previous quarter but are expected to regain strength. Quantum's OEM business was pressured as a result of the inability to keep up with product demand.

San Jose-based Priam reported first-quarter revenue of $31.1 million, an increase of 14% over $27.3 million in the year-earlier quarter and a decrease of 11% from its fourth-quarter 1987 revenue of $35.1 million. It reported a net loss of $2.5 million, or 10 cents per share, compared with a net loss of $4.8 million, or 20 cents per share, in the same period last year. "The costs associated with the ramp-up of production of our new 380Mbyte 5¼-in. disk drive product combined with the investment in our Taiwan manufacturing plant contributed substantially to the net loss for the quarter," a company spokesman said.

Cipher revenue, earnings down

Cipher Data Products in San Diego, a magnetic tape and optical disk drive firm, said its first-quarter 1988 revenue was $39.3 million, 12% less than the $44.8 million reported a year earlier. Net income was $686,000, down 33% from $1.02 million. Earnings per share were 5 cents compared with last year's 7 cents.

Cipher said revenue declined because its optical disk drive subsidiary, Optimem, was "not meeting its aggressive revenue growth plan." The company was unable to produce some $3 million in printed-circuit boards in the half-inch reel-to-reel tape business, which affected earnings.

Roy, Utah-based Iomega reported third-quarter revenue of $22.2 million, down from $31.2 million in the same quarter last year. Iomega had a net loss of $2.2 million, or 14 cents per share, compared with last year's $1.3 million, or 8 cents per share.

CBEMA

CONTINUED FROM PAGE 103

and international trade statistics," the study concluded.

CBEMA officials attributed the market share to the fact that U.S. companies increasingly use offshore production facilities as part of a strategy that makes them more competitive. "In other words," Smoot explained, "our companies import in order to export. In general, they import lower cost, high-quality parts and components and incorporate them into products that are then exported."

The study made clear that its intended audience is Congress, which is considering a major package of trade legislation.

"As the CBEMA industry's trade surplus shrinks, we are under increasing threat of protectionist legislation that would cut U.S. companies off from global sources and global markets, leading to economic decline," the study's preface said. The study is intended to analyze global market data "in an effort to support CBEMA's goal of maintaining open markets throughout the world," it said.

Hostilities

CONTINUED FROM PAGE 103

on Ungermann-Bass President Ralph Ungermann, who appears ready to resist DCA to the end. "It is obvious that the proposal has been timed to take advantage of the unprecedented decline in the securities markets," Ungermann said. Ungermann-Bass stock closed at 6⅞, its low for the year, the previous trading day.

Then, in a move that would make any aspiring Brooklyn Bridge salesman proud, DCA issued a press release emphasizing the amiable intentions of its acquisition offer. "We would hope that the Ungermann-Bass board would view our proposal in the friendly, nonhostile and positive manner in which it was intended," DCA Chairman Bertil Nordin said in the statement. Who's trying to kid whom?

The industry's other battles are raging in Horsham, Pa., and Tulsa, Okla., where takeover targets Decision Industries Corp. and Telex Corp. are pondering their next moves. The market crash had the peculiar effect of *lowering* the price of the tender offer from Decision Industries suitor Econocom, while Edelman, back in the high-tech ball game, is still awaiting a response from Telex.

The current positions of Decision Industries, Telex and Ungermann-Bass should remind all high-tech firms that they may be vulnerable to unwelcome suitors. The intentions of a horde of companies to buy back their own stock, in addition to the investment opportunity, should help keep more shares out of potentially hostile hands.

Vendors must be ready to take steps to prevent that from happening, but should not be paralyzed by it. The worst thing that could happen for users would be for fear and loathing to take over, focusing vendor executives' attention on building higher walls around their companies instead of improving the products and service coming out of them. There may be ugly times ahead for the industry, but vendors must make sure that the innocent bystanders — their customers — don't become the victims.

Wilder is *Computerworld's* senior editor, computer industry.

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Arthur Young's Richard Bell

Trimming the cost of finding qualified employees through cooperation

Richard Bell is staffing manager for Arthur Young in Dallas and acting chairman of the Southwest High Technology Cooperative, a group of employment executives in the Dallas area who are combining their efforts to reduce recruiting costs and share information about candidates. Bell was interviewed by *Computerworld* senior writer Michael Sullivan-Trainor.

What are your responsibilities at Arthur Young, and how do you recruit data processing professionals?

I'm responsible for staffing the management consulting practice in Dallas and, to some extent, the Southern region. Our practice is mostly a large-scale IBM systems development practice — data processing consulting from the initial strategic information planning stage all the way through analysis, design and implementation. We have 75 people, more than 50 of whom are in our information technology group.

I recruit experienced programmers, programmer/analysts, systems analysts, systems design people and people with good solid technical skills as well as people skills to operate in the consulting environment.

How do you go about finding these people?

Through advertisement, employment agencies, high-tech career fairs and referrals from people who are familiar with our practice. The best way to find good people is actual referrals from people who know who we are and what we do. Approximately 75% of the people we have hired in the last two years have come from referrals from people that are in the high-tech community.

What role does the Southwest High Technology Cooperative play in your hiring process?

Most of our referrals come through the cooperative. The cooperative is a loose-knit association of between 70 and 80 companies in the Dallas metropolitan area. Company representatives are internal recruiters and staffing managers.

When was the cooperative formed and what is its purpose?

The cooperative was established five or six years ago. Its purpose is to aid each other in the staffing effort. For example, if I interview a candidate and I can't use

Richard Bell

that individual within our organization, I now have about 20 other employers in the area that might be looking for that same type of individual. With the permission of that candidate, I can tell him who to call in those organizations, or I can call the recruiter and say, "Here's a guy you need to talk to." So far I haven't had anybody say, "No, don't call."

In reality, the companies compete against each other for talent in the employment market. But we're going to compete against each other no matter what. If I run an ad in the *Dallas Morning News* and a half-dozen other companies all run ads in that newspaper, a single individual may respond to every one of us. We're all going to interview him, and whoever has the best match of interests with that candidate is going to hire him.

Hiring is expensive — advertising costs, agency fees, salaries, the whole ball of wax. Any method that can improve the quality of people we interview or reduce the number of people we interview to find the ones we need can reduce that cost of hiring.

If the guy is good and I can hire him, I'm not going to refer him anywhere. But if there is not a match and I can help that individual find a job with another company, then I have a friend, and Arthur Young has a friend, in that company. It also means that whoever I refer him to is probably going to try and return the favor.

What percentage of people that you interview for positions at Arthur Young do you refer to other companies in the cooperative?

In 1986, we interviewed 389 people face-to-face and hired 15. Of the remainder, I probably referred 50 or 60 to other companies. The majority were made offers by companies within the cooperative. They may have gone from me to another company and then to someone else.

Is there a taint of rejection when you do that? Does Arthur Young want American Airlines' rejects?

You have to understand that American Airlines has a very specific technical skill set that they look for. Not everyone in the world will have that, but a lot of people want to work for American Airlines. If they interview with American, but they don't have those skill sets, the recruiter over there knows we may be looking for someone with that background, and they may refer them over here.

Then does the cooperative work best when the companies have complementary needs rather than the same ones?

When you have as many companies as we have, there will always be ones that are looking for the same types of individuals.

We also help each other outplace. If one company is going through a reduction in staff, they will use the cooperative to find jobs for those people they will have to lay off. The last thing you want to do is build a bad reputation, because when you have a layoff, the firm's reputation is hurt. If you can help those people not be stranded, you don't get hurt as bad.

The cooperative works best when the staffing managers know each other and know what each company is looking for in the way of talent.

If I interview an individual and they have good, marketable skills and I can't use them, I just know off the top of my head who might be able to use them. I don't go out of my way to go through my files and pull out all the resumes if another company calls. But I'll help candidates find the right companies to talk to.

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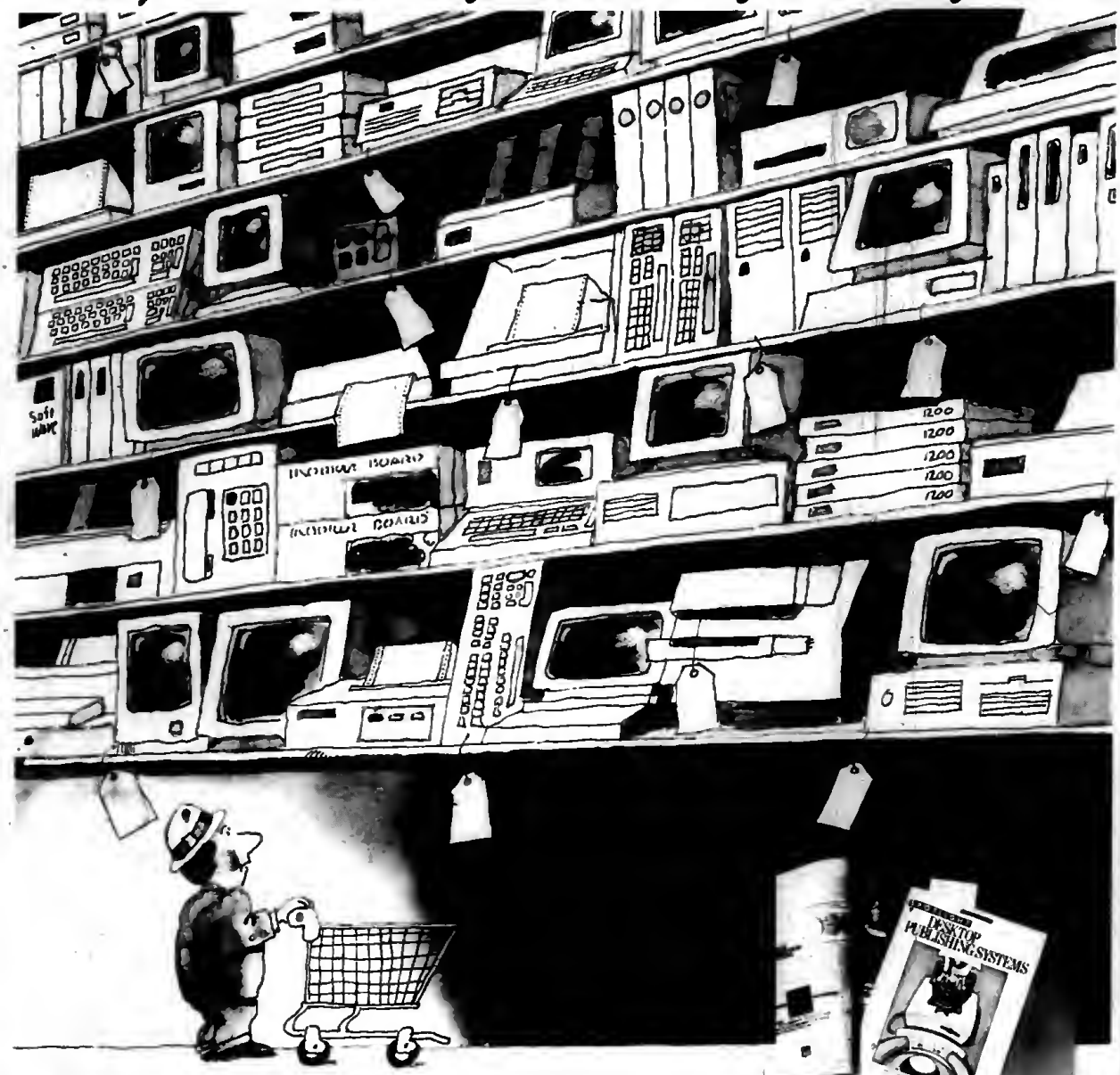

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Several bold strokes are creating a place for the Macintosh within the context of corporate computing.

MAKE ROOM FOR THE MAC

BY NINAMARY BUBA MAGINNIS

MITCHELL J. BATES

While Macintoshes won't be sweeping IBM Personal Computers off professionals' desks any day soon, MIS managers are beginning to view the Apple Computer, Inc. machines as a viable alternative to IBM micros and clones and as an effective desktop connection to larger systems.

"We've seen the Macintosh — and Apple in general — go from a standing start 18 to 24 months ago to penetrate the office in significant numbers of Fortune 1,000 accounts," says Benny Lorenzo, analyst with New York-based L. F. Rothschild & Co.

To date, Apple has captured almost 13% of the market share in the highest ranked Fortune companies and could, in time, easily grab 20% of the micro space, according to Lorenzo. The domestic personal computer market is increasing almost 25% annually, he claims, and Cupertino, Calif.-based Apple is outpacing the industry with a 35% annual growth rate.

Macintoshes compete well in the micro race because they fulfill two end-user requirements — connectivity and ease of use. The machines are often able to connect easily to other vendors' equipment while providing one of the sleekest human-to-machine interfaces in the industry, according to Tom Bertram, an analyst with San Jose, Calif.-based Dataquest, Inc.

"The Macintosh human-to-machine interface is still the most consistent, easiest and intuitively obvious interface that I've ever seen," says Timothy Turnpaugh, executive vice-president and manager of the operations group at Seafirst Bank in Seattle.

For Seafirst Bank, a veteran Macintosh installation, the micro was an economically wise purchase on two counts. The machine was priced well below the IBM PC, and it cut training costs.

"We were not targeting the Macintosh to computer-literate people," Turnpaugh says. "The overwhelming preponderance of the populace — including me — does not want to be computer literate. We want to use computers to do what we've got to do and move on." Connectivity, however, is key. "We connected all 3,000 of our Macintoshes, and I won't install them unless they connect to our statewide network [of Macintoshes]," Turnpaugh says. "We're into connectivity. That's the true value of the machine."

Seafirst uses a variety of Macintosh models. A few are Macintosh IIs and Macintosh SEs; the Macintosh Plus is used by those with larger memory requirements. But the majority of Macintoshes used are the older 512Ks and the 512KE upgrade. Turnpaugh says of these older machines, "Neither machine is the latest and greatest from Apple, but we feel we're getting a lot of good use out of the old stuff."

Family ties

Apple's Macintosh family includes three current models: the Mac Plus, Mac SE and the Mac II. The Plus and SE models incorporate the Motorola, Inc. 68000 chip, while the Mac II uses the faster Motorola 68020 chip and supports color and stereo digital sound. An external hard disk can be attached to all three models, using the SCSI interface. The three Mac models are completely compatible so that users can run

Maginnis is a free-lance writer based in Webster, Mass.

Make room

FROM PREVIOUS PAGE

programs on any model without changing code, according to Apple.

The Mac Plus comes standard with 1M byte of memory, expandable to 4M bytes, and operates on one floppy disk. The Macintosh SE is similar, except it can run dual internal floppies or one floppy and one hard disk. The SE also has an internal expansion slot for peripheral cards to increase functionality, according to Apple.

The Macintosh II is a departure from the original Apple design of a single unit for the CPU and screen with a separate keyboard. The three-piece Mac II includes a wide-base unit, monitor and keyboard plus six internal Nubus expansion slots.

With the big guys

Lately, the Macintosh has been demonstrating its versatility with third-party links to IBM, Digital Equipment Corp., Wang Laboratories, Inc. and Hewlett-Packard Co. machines, to name just a few. Connectivity vendors like Norwalk, Conn.-based Dataviz, Inc. specialize in linking the Macintosh to other vendors' hardware. In addition, Apple itself is promising a Unix-based operating system by early next year.

Connectivity to larger systems is part of Apple's new appeal. With the Mac's ability to link easily to the corporate installed base, Apple can position the micro as an easy-to-use desktop workstation that also enables users to access information on larger systems. One connection becoming increasingly popular is the Mac-to-VAX connection, to obtain a link to the DEC system.

Apple's Peter Hirshberg, marketing manager for large systems communications, notes, "The real demand for [Mac-to-VAX links] is coming from our customers. They're saying, 'We have a VAX and a Macintosh and want those tightly integrated because we think the combination of a Macintosh and VAX is a very strong tool.' "

Mac savings

For McDonnell Douglas Astronautics Co., the recent acquisition of 30 Macintosh SEs with 20M-byte hard disks was a matter of economic practicality. The Macintoshes can run software design applications for $5,000 a terminal, compared with the $30,000-per-seat price of a full-blown DEC Vaxstation, says Terrence Nicholson, McDonnell Douglas technical manager for the company's harpoon-missile training system project.

The St. Louis-based defense contractor had been using four Macintoshes to support its documentation efforts. When staff members saw what the Mac could do, Nicholson says, they wanted Apple machines for their own applications.

With their newly acquired Macintosh micros, McDonnell Douglas developers draw hierarchical prototypes with an object-oriented graphics package called Design from Cambridge, Mass.-based Meta Software Corp. The prototypes are then shown to customers for approval so developers can complete the programs, Nicholson states. "We looked at a similar application for the Vaxstation, but it didn't have the same features," he says, explaining that the alternative package for the DEC workstation costs $20,000 per copy.

McDonnell Douglas Astronautics is still primarily a DEC shop, however, and the Macs had to link easily to the Microvax II, on which the compilers reside and application development takes place. The Macs talk to the Microvax via Phonenet, a Farralon, Inc. communications product that works across ordinary telephone lines.

Alisatalk, from Pasadena, Calif.-based Alisa Systems, Inc., is installed on the Microvaxes, which allows the Macintoshes to use DEC hardware as file servers. Since they can operate as stand-alone micros, the Macs can serve double duty.

The only drawback to the current arrangement is speed, he notes. "The bandwidth of Phonenet is a little bit slow," he says. "We might have looked at a direct connection with Ethernet, but it's a more expensive."

Collaborators

Collaboration, rather than competition, with IBM at the PC level has become the new Apple credo. "I think, traditionally, people looked at the Macintosh marketplace with almost religious undertones. They were either fiercely Apple or fiercely IBM," Hirshberg says. "To a degree, we've moved away from that religious thing. Now we say, 'Hey, we have a network, we can all work together.' It's a very healthy environment."

What has happened, says Howard Bornstein, president of Design Equilibrium, a Palo Alto, Calif.-based consulting firm, and author of *Under the Apple: Discovering the Power of Macintosh Desk Accessories*, is that "Apple has rightly understood that for the Macintosh to be accepted in corporate America, it needs to work alongside PCs, not replace them."

With the right interface, the Macintosh SE and II can also run applications written for Microsoft Corp's MS-DOS, says Christopher Bryant, Apple's work group marketing manager.

A coprocessor card manufactured by Irvine, Calif.-based AST Research, Inc. allows the Mac SE and II to execute the same code that an IBM PC runs, Bryant says. The coprocessor card creates a window on the Macintosh, and the MS-DOS application looks the same as it would on the IBM PC.

Although compatibility may be important when Macintoshes must coexist with IBM PCs and clones, Bryant maintains, in only a few instances would a Mac user find great value in running an MS-DOS application. "The coprocessor card could be used to run a specific vertical-market application that is not yet developed for the Macintosh operating system," he says.

The ability for the Mac to access the same files or file server as an IBM PC is more important, according to Bryant. The Apple PC 5¼-in. drive and a controller card allow the Macintosh to read IBM PC disks and translate them to an IBM format.

Apple's Appleshare PC product, set to ship in 1988, will allow the MS-DOS PC to access the Appleshare file server. Using an external floppy drive such as Salt Lake City-based Dayna Communications, Inc.'s Daynadrive or the Apple PC 5¼-in. drive, micro users will be able to access files transparently from either the Mac or MS-DOS environment. The application will be represented in either the Mac or MS-DOS format, depending on which micro the user is working on, Bryant says.

Because the Macintosh II can now run applications on MS-DOS, a virtual plethora of software packages is available.

"From a user standpoint, the most important issue is putting products out in the field that look the same," says Alvyn Schopp, senior manager for the Systems Evaluation Approach/Computerized Audit Support Group, or SEACAS, at the New-York based accounting firm, Peat, Marwick, Main & Co. "Our auditors should know how to use a product just by knowing how to use a Macintosh.

Peat Marwick, which first began installing Macintoshes in 1984 [CW, Jan. 30, 1984], now has more than 7,000 installed worldwide, according to Schopp. The models Peat Marwick uses include the Mac Plus, the Mac SE, which its auditors use in the field because of its portability, and the Mac II.

Peat Marwick's field auditors, who are standardized on the Macintosh, use the machines with the firm's proprietary 2190 software to prepare clients' detailed working papers, flowcharts and sampling techniques, Schopp says. The firm uses Microsoft's Excel spreadsheet program and several commercial data base applications.

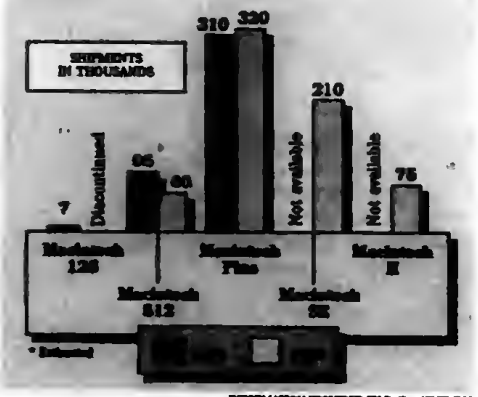
"We believed the Macintosh was a viable option on its own merits," Schopp says. "However, we also knew that as the Macintosh became more popular from a monetary standpoint and opened its architecture, things were only going to get better. We were always able to connect somehow, but to get friendly connections is what the real benefit is today.

Within the last year, Peat Marwick installed a mainframe-to-micro link that improves application writing. Software developers can now write, edit and test all of the 2190 programs on Macintoshes so programmers do not eat up valuable CPU time in testing programs. Finished programs are then uploaded to the IBM 3030, 3080 and 4300 mainframes.

"Before, when we wrote programs for clients, we stored them on a client's computer," Schopp explains. The link is a two-way street, allowing auditors to download clients' data files so that financial statement

> "APPLE HAS understood that for the Mac to be accepted in corporate America, it needs to work alongside PCs, not replace them."
>
> HOWARD BORNSTEIN
> DESIGN EQUILIBRIUM

Movement in Macintosh models
Worldwide unit shipments for various models



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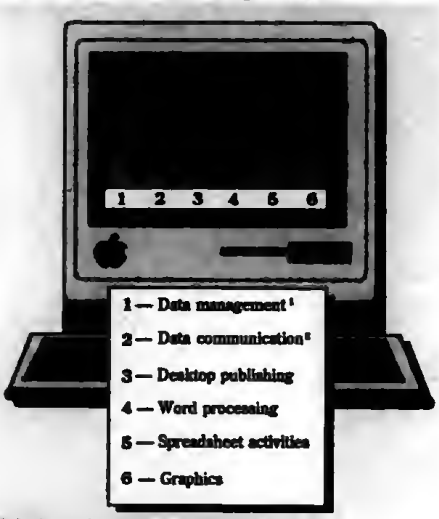
CW CHART

Business/professional use of Macintosh
Activities performed, shown by percentage of sampled users



[1] With data base or data management capacity of spreadsheet
[2] With modem, communication program and subscription to on-line information service

INFORMATION PROVIDED BY CREATIVE STRATEGIES RESEARCH INTERNATIONAL, INC.
CW CHART: MITCHELL J. HAYES

subsystem programs run on the micro, again sparing the mainframe's CPU. "There's no data entry. It eliminates typos and transpositions," he says.

Peat Marwick auditors only need to know how to run an application on a Mac. Previously they had to familiarize themselves with Applied Data Research, Inc.'s Roscoe, TSO, DEC's EDT — whatever editor the client used, Schopp remarks. "Each time, the auditor would have to learn new access or editing methods. Now it's standardized. There's no need to learn details of a client's operating environment," he says.

Weighing options

Another machine still under evaluation, Qualstar Corp.'s Qualstar 10-54 Mac Tape Drive, will enable auditors to transport information from a mainframe's 1,600 bit/in. computer tape to a Macintosh II, Schopp says. The Mac II's ability to support 144M bytes of memory precludes any downloading limitations.

Schopp explains, "If we have a client with no connectivity options on the mainframe and no modem or modem port, the client could still give us a computer tape that we could download directly to the Macintosh without going through telecommunications."

The accounting firm is currently evaluating Dayna Communications' Daynafile, a software package that lets Macintosh computers read customers' IBM PC files. No purchase recommendation will be made until the company tests the Apple PC 5¼-in. drive, Schopp says.

Fitting in

Most Fortune 500 corporations have invested heavily in IBM PCs and clones. To make headway in this environment, Macintoshes need not only link up with existing micros, they also need to communicate with these machines so that a firm's initial investment will remain intact.

General Electric Co. embraces a mixed environment that includes approximately 25,000 IBM PCs, 10,000 clones and 5,000 Macintoshes, according to Jeff Ehrlich, manager of product technology for GE's corporate information technology group. "We have Macintoshes and IBM PCs and clones on the same network passing documents and mail," Ehrlich says. "We recognize the Macintosh is a very valuable piece of equipment. It's worth the effort to let them coexist with the IBM PCs.

"To me, the Macintosh doesn't have any weak points," he adds. "It does almost everything better — spreadsheets, data base applications, graphics and word processing."

GE's PC users experience difficulty downloading fonts into HP Laserjets, Ehrlich reports. Macintosh users, on the other hand, have no problem. No software installation is required, he says, and because networking is built into the Apple systems, linking machines is inexpensive. Macintoshes — IIs, Pluses and SEs — also connect to GE's Wang VS systems with an ease the IBM PC cannot match.

There are some instances, however, in which the IBM PCs have the upper hand, Ehrlich says. But they are limited and predictable. PCs connect more easily to IBM 3270 systems and mainframes, he says. "IBM's Personal System/2 and OS/2 have the potential to become more Mac-like with their interface years down the road, but it will take a long time and be quite painful and expensive for the IBM users," he notes.

APPLE'S new openness coincides advantageously with IBM's closure of its PS/2 architecture. Users are confused as to what PS/2 and OS/2 will actually do.

Apple's new openness coincides advantageously with IBM's closure of its PS/2 architecture. Users are confused as to what PS/2 and Microsoft's OS/2 will actually do, Dataquest's Bertram says.

Furthermore, says Bill Kirwin, program director of personal computing at the Gartner Group, Inc. in Stamford, Conn., no one is quite sure how software developers will respond to OS/2. "Each software vendor has created its own identity, its own product differentiations," he explains. "It's not clear how much these vendors are going to sacrifice their differentiation of user interface so that they can all work together smoothly."

Although the PS/2 will most likely demonstrate significant improvements with a more Mac-like user interface, Apple is not sitting still. The micro vendor is already including as standard some powerful, sophisticated features such as Hypercard, a "stackware" organizer, and Multifinder, a utility that is Apple's first step toward true multitasking.

Even with robust standard operating system features, the Macintosh is only at the threshold of becoming a capable business application environment, analysts and developers admit.

Multifinder, for example, requires more development in the area of interprocess communications — the ability to automatically update files among various Macintosh applications — according to Marc Canter, president of Macromind, Inc., a Chicago-based Macintosh software house.

These so-called hot links would provide up-to-the-minute, accurate information without the users having to think about updating information — no matter

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what the application, Canter explains.

"Multifinder is not really multitasking. You need interprocess communications to have multitasking. The two functions have to arrive at the same time," Canter declares.

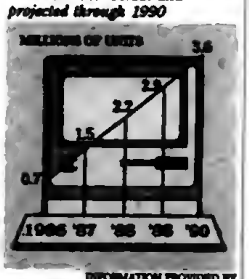
Although Apple has built the Motorola 68020 microprocessor into the Macintosh II, the machine is still running a 24-bit operating system, according to Canter. Until the core of the operating system is revised to take advantage of the full 32-bit address space, he says, Multifinder will be a pale imitation of true multitasking.

Making connections

MIS managers who choose Apple will find a vigorous third-party community of networking and applications developers available to support their decision.

Macintosh growth pattern

Installed base: actual and projected through 1990



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CW CHART

In the business arena, Microsoft is by far the most prolific Macintosh developer, next to Apple itself. The Seattle-based software house committed to developing applications for the Macintosh two years before Apple shipped its first Mac in January 1984, according to Valerie Houtchens, Microsoft's group product manager for Macintosh applications.

At the time, the Macintosh promised a very small market. "It wasn't even that great for desktop publishing back then," Houtchens admits. But, she recalls, Bill Gates, Microsoft's founder, and Steven Jobs, Apple's cofounder and former president, shared a dream of creating a PC with a graphical user interface, a machine that was easy for people to use.

Microsoft also believes in a dual-environment standard, according to Houtchens. "We believe," she says, "that corporations, educational institutions, government agencies and even small business will often opt for a mixed IBM PC and Macintosh environment at the micro level."

There is little question that Microsoft is in a strong position to rally support behind this idea and the Macintosh. Part of Microsoft's line of business applications is Excel, a Lotus Development Corp. 1-2-3-compatible spreadsheet. Microsoft recently acquired Forethought, Inc., developer of Powerpoint presentation software, and announced Excel Windows. The firm also plans to pioneer new products and upgrade the Mac line. Excel Version 1.5 is slated for release in the first quarter of fiscal 1988, according to Houtchens.

McDonnell Douglas is running Powerpoint presentation software on its Macintoshes, giving its engineers tools to compose graphs and charts for customer presentations.

According to Nicholson, Powerpoint was a clear instance in which the Macintosh offered something the VAX did not. "No presentation software runs on the VAX," he says. "The Macintosh has a well-defined interface and has been around long enough for a lot of innovative software to become available. That's what swayed people toward the Macintosh — innovative but inexpensive software."

Joining the line

The Macintosh is even gearing up to operate on factory floors.

Billerica, Mass.-based Automatix, Inc., a manufacturer of industrial robots and artificial vision systems, has joined with Apple to put out the AI 90, a Macintosh II micro that has been ruggedized, or fitted with protective elements, for the factory floor.

Until manufacturing applications are written for the Mac II, users can count on compatible MS-DOS applications that are

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available, according to Joe Campbell, marketing representative at Automatix.

Odesta Corp. in Northbrook, Ill., says it is using the Macintosh as a front end for its Helix VMX, a relational data base application that resides on VAX computers. "There's clearly a much larger business opportunity because of the very strong growth of the Macintosh in that marketplace," reports Michael DeMeyer, Helix VMX product manager at Odesta.

The original strength

While it is clear the Macintosh will no longer be relegated strictly to the realm of desktop publishing, the machine is expected to retain strong roots there. And with a little imagination, the combination of text and graphics can solve unique documentation problems.

Organic chemists at Princeton, N.J.-based Squibb Pharmaceutical, Inc. depict molecular construction with Apple's MacDraw software and incorporate pictures with text, reports Peter Sprague, Squibb's director of chemistry, cardiopulmonary agents.

Using manual production methods, a 15-page document would normally have taken Sprague and his secretary a week to complete. With the Mac, the same document can be finished in a day. "We have 40 chemists and two secretaries. We absolutely were unable to keep up with the demand. The work kept piling up. Now the chemists can't send us the stuff fast enough to keep us bogged down," Sprague says.

The Macintosh may be giving corporate America a choice in micro power, but just how much market share Apple can garner in the next few years is anybody's guess.

As Bill Langenes, a research associate for Creative Strategies Research, a Santa Clara, Calif.-based high-tech market research and consulting firm, points out, "There's fewer than one Macintosh for every 10 PC- or MS-DOS machines. Only the most optimistic evangelist would expect the Macintosh to develop an equal standing with MS-DOS machines in terms of market penetration and corporate endorsement.

"However, in terms of capability and performance," he says, "the Macintosh II is on equal standing with any of the IBM PS/2 systems."

THE NEARLY fanatic devotion of some Macintosh users makes MIS managers uneasy.

Changing status quo

Established attitudes are still something the Macintosh has to overcome. Richard Coulombre, president of The Support Group, a Quincy, Mass.-based Macintosh consulting firm, says that an MIS director confessed to him that he had deliberately avoided installing Macintoshes at his company, even though he felt they were better than the PCs selected.

The reason for this, Coulombre says, was that the director feared their introduction would create several thousand PC skeletons.

"He felt that if the users ignored the PCs, the investment would go down the tubes," Coulombre says. "Everyone would like to put a piece of equipment on an employee's desk that makes them happy and productive, but they can't do that at the cost of ignoring a capital investment."

Beyond the practical level, Design Equilibrium's Bornstein says that the nearly fanatic devotion of some Macintosh users makes MIS managers uneasy. It is important, however, that the Macintosh be evaluated on its own merits, not on the basis of the emotionalism of these fringe users, he says.

There is little question that more users are doing just that.

"People are recognizing the Macintosh's capabilities," GE's Ehrlich says, "and it's gratifying to see that people are still willing to look at the better mousetrap. To me, it's good to have a Macintosh there to put the pressure on IBM to do as good a job." •

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PRODUCT FACE-OFF

Powerpoint for simplicity, Videoworks for pizzazz

BY MARY JANE MARA

At the Seybold Conference on Desktop Publishing last September, IBM and other giants of the microcomputer industry turned out in full battle dress, ready to offer the first substantial challenges to Apple Computer, Inc.'s position as ruler of the electronic desktop.

Apple did not even waver, however. Instead, it solidified its position with a quick flanking action. The Cupertino, Calif.-based company ignored desktop publishing entirely and instead addressed a whole new desktop genre — desktop presentations.

Apple's Chief Executive Officer and Chairman of the Board John Sculley explained the strategy behind his company's fancy footwork, pointing out that the market for desktop presentation tools is even greater than the market for desktop publishing tools.

Third parties jump to it

In keeping with its new focus, Apple has encouraged third-party developers to create tools for the presentation trade, and the developers' response has been swift and varied.

Already in the works are special add-on boards, monitors of every size and shape, slide-makers and printers and a myriad of software packages (many of which are actually slyly repositioned desktop publishing applications).

Among the first of the third-party software products to enter the field are two packages so different that it is hard to believe both are intended for the same market: Microsoft Corp.'a Powerpoint and Videoworks II from Chicago-based Macro Mind, Inc.

The simple life

Powerpoint, which was introduced late last summer, was the first program shipped to the Macintosh-buying public that addressed the desktop presentation situation head-on.

Originally created and published by Forethought, Inc., based in Sunnyvale, Calif., Powerpoint now belongs to Microsoft, which purchased Forethought earlier this fall.

To date, however, the only alteration Microsoft has made in the product has been the price, which jumped from $195 to $295 as soon as the acquisition was announced.

> POWERPOINT is a tough, well-designed application . . . . Anyone who routinely puts together presentations for office, school or elsewhere could do so in half the time and with half the effort.

Although many in the computer industry expect future Powerpoint updates to include a bevy of added features, the current version has been widely praised for the simplicity of its user interface and the straightforward way it meets presentation needs.

Special effects

The software allows users with minimal skills to easily create overhead transparencies, 35mm slides, Macintosh screen slides and flip charts. There are tools for importing scanned or drawn graphics, spreadsheet information, outlines and charts.

There are also modes for creating a speaker's notes — an annotated miniature storyboard of a presentation's slides — and for producing accompanying audience handouts.

Powerpoint comes with a hardcover book detailing its method of operation and features. A smaller reference manual deals with the program in a more abridged manner and contains design help and presentation tips.

The software package includes two 800K-byte disks. One contains the program, Help files and an entertaining demonstration showing the presentation Christopher Columbus might have made to Queen Isabella prior to his historic voyage.

The second holds more sample presentations, templates, slide layouts, storyboard forms, presentation fonts and Smart Scrap, a desk accessory from Solutions, Inc. that lets Mac users create and

Mara, based in Austin, Texas, is a cofounder of Mac Underground, an on-line information network for Macintosh users. She is also a frequent contributor to Macintosh periodicals.

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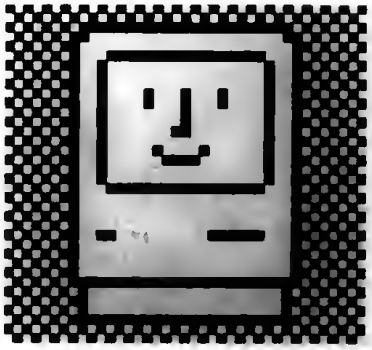

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All in all, Powerpoint takes a lot of the complication out of producing simple presentations.

Artist's tool

Videoworks II, the improved version of Macro Mind's Videoworks animation program, is far removed from the realm of simplicity, but it offers the rewards of animation sound and color to those capable of handling it.

Videoworks II may look like familiar territory to users of the original Videoworks. However, the latest version adds many features and improvements to the interface, including a separate application called Over View for quickly perusing the scenes of a Videoworks "movie" (a quick, animated series of slides) or putting together a spur-of-the-moment slide show.

Over View accomplishes this by automatically stringing together graphics files from any designated folder on the Macintosh desktop and allowing the user to flip individually through the resulting stack of files.

The Videoworks II package consists of a 280-page reference manual and three 800K-byte disks that, in addition to the Videoworks and Over View applications and familiar system files, contain tutorials, clips, sample movies and a guided tour. Any well-versed Macintosh user can go right from the guided tour to producing simple movie sequences.

A measure of graphics ability is required to take full advantage of the software's capabilities, however. Although the box boldly states that users need not be artists, a nonartist would, after a point, clearly find himself frustrated with Videoworks.

Even with the generous supply of clips and sample animation sequences included in the package, users need graphic design and production skills to truly benefit from the wide range of Videoworks II possibilities and for the results to meet personal presentation needs and goals.

Levels of ambition

The Videoworks application does not stand up to pressure as well as Powerpoint. It is prone to unpredictable crashes, and the manual advises the user to store frequently. But to say the latter is a more robust program would be unfair, since Powerpoint does not attempt anything nearly as complicated as animation or its ancillary tasks.

Nevertheless, Powerpoint is a tough, well-designed application that performs all its functions with more speed and ease than Videoworks II. Anyone who routinely puts together presentations for office, school or elsewhere could do so in half the time and with half the effort using Powerpoint.

Videoworks II, on the other hand, is neither easy to learn nor easy to use, except in comparison with other, more complex methods of producing computer-generated animation.

Does this mean that Videoworks II has no place in the desktop presentation market? Not at all. It simply means that, while Powerpoint satisfies the requirements of the general presentation market, Videoworks answers the needs of a highly specialized segment within that market — those users who need its extra power and pizzazz badly enough to invest the necessary time and effort.

Videoworks II would be a boon to any user faced with highly creative presentation demands, not to mention a bargain at the $195 price, which is $100 less than the price of the less ambitious Powerpoint.

Videoworks II is compatible with all the Macinctosh systems currently sold, from the low-end Macintosh 512K on up.

But where Videoworks II really shines is on Apple's top-of-the-line microcomputer, the Macintosh II, where its presentations take full advantage of color and a faster, more powerful processing environment. ●

WHILE Powerpoint satisfies the requirements of the general presentation market, Videoworks answers the needs of a highly specialized segment within that market — those users who need its extra power badly enough to invest the necessary time and effort.

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A chip-to-chip comparison

BY RAND MILLER

Any comparison of microcomputers eventually leads to the microprocessor chip. This basic information is a good starting place when discussing the viability of the Apple Computer, Inc. Macintosh.

The big news these days in chips is the Intel Corp. 80386 microprocessor. IBM constructed the original Personal Computer with Intel's 8086 and has since upgraded to the 80286 and 80386, featured in the company's Personal System/2 line. Compaq Computer Corp. and many of the clone makers have also released 80386 machines, promising to have put mainframe power on desktops.

The Macintosh, however, does not use the much-heralded 80386. The Motorola, Inc. 68000 provides its processing power.

With the fanfare surrounding the 80386, you would think it was unchallenged in speed and power. That, however, is not quite accurate.

Motorola's 68000, which Apple chose for its low-end Macintosh models — the Macintosh Plus and Macintosh SE — is a hybrid 16- or 32-bit microprocessor that is comparable with the Intel 80286 in speed. The low-end Macintoshes compete admirably with the 80286-based IBM PC and compatibles in raw processing ability.

Motorola pulls ahead

In a comparison between the Motorola 68020, which Apple elected to use in its Macintosh II, and Intel's 80386, the results are even more definitive. Although the 68020 received little publicity when announced, it ran benchmark tests approximately 55% faster than the 80386.

The 68020, like its competitor, is a full 32-bit processor and is, in fact, the microprocessor of choice for graphics- or calculation-intensive computer equipment. To be fair, the 68020 microprocessor, as configured in the Mac II, does not realize its full potential, providing a throughput speed that is roughly the same as the PS/2 Model 80, IBM's high-end PC system.

Math coprocessors also contribute to a microcomputer's speed by performing math-intensive operations for the microprocessor. The Mac II comes equipped with the Motorola 68881 coprocessor, which compares to the Intel 80287 used in IBM and compatible machines.

The 68881 is supported by the 68020 microprocessor, which means most software using Standard Apple Numeric Environment routines can access the 68881 automatically. On the other hand, the 80287 is treated as a peripheral, and any programs that require its math-handling capabilities must be rewritten.

Given the rate at which things are changing in microcomputers, the chips and numbers being thrown around today will probably be old news by this time next year. Word has been floating around of an Intel 80486 chip, scheduled to be available around 1989.

WITH the fanfare surrounding the 80386, you would think it was unchallenged. That, however, is not quite accurate.

Motorola, however, reportedly plans to introduce its 68030 chip in production quantities in first-quarter 1988. This chip offers twice the performance of the 68020 and still maintains software compatibility with the older 68000 family chips. The 68030 uses some parallel processing techniques previously found only in supercomputers.

Beyond horsepower

Comparing computers by examining their microprocessors is like comparing cars by examining their engines. You find out how much horsepower is available but not how responsive the car is.

This is where the Macintosh really outperforms the IBM machines. IBM PCs and compatibles compute and interact with brute force. The Macintosh, on the other hand, handles all the power with finesse.

The sort of finesse interface that works so well on the Macintosh will soon be available on the IBM PS/2 line. Its Presentation Manager software will be added to OS/2 to provide more palatable access to the power provided by those machines. But that is not scheduled to be available until later next year.

The Apple Macintosh systems are not toys — they provide raw computer power that equals and sometimes surpasses IBM PCs and compatibles and a graphic interface that, by comparison, makes using that power effortless.

So now users have another alternative; their choices are harder, and their chances for error are greater. Something to keep in mind, however, is that while maybe no one ever got fired for buying IBM, nobody ever got promoted for being ignorant of the options, either. •

Miller is a programmer and consultant based in Henderson, Texas.

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Apple shows it can talk

BY LEWIS GUICE

While industry pundits scratched their heads over the Macintosh, Apple Computer, Inc. launched the multibillion dollar desktop publishing business. Now the company is again proving its market savvy by giving hardware and software vendors a gold mine in the form of desktop communications.

Unprecedented graphics capabilities and gains in personal productivity accounted for the Mac's initial popularity with business users. But the machine's acceptability was limited as long as it remained, essentially, a stand-alone.

Apple launched its first desktop communications product, the Appletalk networking protocol, in October 1984. It is now built into every Macintosh that rolls off the assembly line. Up to 32 Macintoshes can be networked with an easy and inexpensive installation procedure.

The Macintosh II, with its enhanced power and expandability, is the linchpin of full-scale desktop communications. Developers and users alike praise its versatile communications capabilities.

Cry for more

Users were soon asking for more, however. They wanted electronic mail service, shared disk capability and multiuser applications. Managers needed ways to tie Macs to other company networks. For Apple, those challenges hold the lure of market domination.

The company needn't shoulder the burden alone, however. Other hardware manufacturers see huge profits in tying Macs to their computer systems.

One promising software package is Alisatalk, by Alisa Systems, Inc., which allows a minicomputer running Digital Equipment Corp.'a VAX/VMS to act as a network file server for Macintoshes. Although its file serving software is now proprietary, the product will soon support Appleshare. When this happens, Macintoshes will be able to access Appleshare file services from VAXs. Further, Macs with terminal-emulation software will be able to do serious number-crunching, with results that are convertible to a Mac format.

Access to a VAX system requires Fastpath, an Ethernet-to-Appletalk bridge from Kinetics, Inc. Fastpath is a general-purpose, programmable gateway/bridge between Appletalk and Ethernet.

Because it can span several Appletalk nets and connect Macintoshes to host computers along a high-speed Ethernet backbone, Fastpath can serve as the basis for many networking solutions. Ethernet's network capabilities are vastly superior to Appletalk's. When the Macintosh is connected to Ethernet, users get enhancements in speed, bandwidth and distance, as well as standardized access to major computing environments, including VAX/VMS, Unix and IBM's PC-DOS.

The entire desktop communications market is struggling to define itself and make the necessary transitions to meet new market demands. Third-party affiliates wonder if Apple has the wherewithal to compete with the connectivity development teams of companies such as IBM, DEC, Sun Microsystems, Inc. and Apollo Computer, Inc.

The company must still create products that connect to minicomputers and mainframes, products more sophisticated than anything the company has ever addressed. Managers recruited from competitors, such as IBM veteran Harold Copperman as manager of Apple's East Coast Training and Sales Group, should sharpen Apple's position in the multivendor market and help educate Apple's engineering and sales forces in expanded technologies and market opportunities.

Planting the seed

The favored seeding strategy at Apple — forming strategic alliances with winning third parties — should cover most interconnectivity bases. Touch Communications, Inc., a network systems vendor in Scotts Valley, Calif., received financing from Apple. It will develop a TOPS network server that manages VAXs, IBM Personal Computers and Macintoshes.

Apple has aligned with DEC to integrate Helix, Odesta Corp.'a high-end PC data base manager, with Mac files. Helix can already share files with DEC.

Apple has also encouraged Northern Telecom, Inc., a telecommunications company, to devise a Macintosh gateway to private branch exchange switching centers that manage mixed-computer networks. Finally, Excelan, Inc., a connectivity vendor based in San Jose, Calif., is hammering out Macintosh interconnection to Unix.

Some alliances with leading-edge universities promise to yield viable desktop communications solutions. Brian Hawkins, a Brown University administrator who maneuvered many Macintoshes into universities, says schools such as Dartmouth College employ desktop communications networks that are five years ahead of the computer industry. •

Guice is the senior systems adviser of Netsolutions, a consulting service firm and value-added distributor of business network systems in San Anselmo, Calif.

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CW1

Development for the masses

BY JERRY DANIELS AND MARY JANE MARA

Hypercard, the latest achievement of Apple fellow and renowned Macintosh programmer Bill Atkinson, hit the ground running.

Beta-test users ushered the product, which was described by its author as an information organizer and authoring tool, into the marketplace with great enthusiasm.

Both Apple Computer, Inc. and the many dedicated Mac enthusiasts in corporations and development houses expected Hypercard to create a whole new generation of software called "stackware," so-named because every Hypercard record is called a card, and each set of cards is called a stack.

Still, amid all the rah-rah of its press releases and enthusiasm of the Mac faithful, Apple flounders when faced with the task of categorizing its newborn child: "It's a data base construction set," the company says. "It's system software." "It's a development environment." Yes, but is it a breath mint? I ask.

> UNLIKE traditional software, stackware can be created by people with subject expertise but no formal training in programming.

Perhaps the best way to get a grip on the product is to look at its broadest implications. Hypercard provides a way to cut through less-than-elegant code and access powerful graphics tools.

Unlike traditional software, stackware can be created by people with subject expertise but no formal training in programming.

Hypercard gives average-to-advanced computer users the power to create programs that answer their specific requirements and, in doing so, puts a major dent in the mystique of the programmer.

Medium is the message

Early user reactions do more to describe this complex product than any literature or company statement. On-line information services like Compuserve, Inc.'s Micronetworked Apple Users Group (MAUG) and Genie's Macroundtables are excellent laboratory environments for observing the effects of Hypercard on the Mac animal in his natural habitat.

Tom Mackie, head of General Electric Co.'s Genie, a nationwide data base and messaging system, thinks most of the early stackware products fall into the "Look, Ma, my first stack!" category.

In his initial analysis of the situation, Mackie concludes that the almost frantic messaging on his network regarding Hypercard was the result of curiosity and not genuine ground-swell support. After the first 60 days, however, he began to think otherwise.

"I finally realized that the posting of these relatively huge Hypercard stacks was really an advanced form of communicating, not just a group of people learning to program like the early Basic users," Mackie says.

"Sure, there's some mental muscle-flexing going on here — people showing off their skills — but the intellectual bandwidth and mental throughput of posted information files went up an

Daniels and Mara, based in Austin, Texas, are cofounders of Mac Underground, an on-line information network for Macintosh users, and frequent contributors to Macintosh periodicals.

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order of magnitude when the first Hypercard stack was uploaded."

Neil Shapiro, reigning Sysop, or chief system operator, of Compuserve's MAUG, has also noted a high level of Hypercard traffic.

MAUG's stack download statistics in the first 60 days following the program's official release clearly reflect the high level of interest in anything dealing with Hypercard.

The Hypercard data library in MAUG, through which members share information, accumulated 145 stacks from its membership, occupying 7.166M bytes of space on Compuserve's Computer Information Service system. Hungry users collectively downloaded 812M bytes worth of these stacks during the first two months of the library's existence, an average of 14.5M bytes per day.

In other words, Hypercard's data library "turns over," or downloads, an average of two times a day — brisk business by anyone's standards. Shapiro says that at first most of the stacks being created were coming from experienced programmers and were mostly utilities.

"Now I think the tide is beginning to turn," he says. "and we're seeing more information stacks being produced by corporate, professional and private users with no programming background per se."

One Macintosh user, Paul McGraw of Kansas City, Mo., is a case in point. McGraw needed to convert a data base of his dental patients from one data base format to another, but the data was not compatible between the two packages and required complicated reformatting.

After trying several utilities that were supposed to do the trick, he finally wrote a Hypercard utility of his own to complete the task. "There's nothing like having that kind of power," McGraw says. "I feel Hypercard has really set me free from the constraints and limitations placed on me by other people's programs."

Closely mirroring McGraw's point of view, Bob Bachtold, senior corporate technical recruiter for National Semiconductor Corp. in Santa Clara, Calif., says.

> "I FEEL Hypercard has really set me free from the constraints and limitations placed on me by other people's programs."
>
> PAUL McGRAW
> MACINTOSH USER

"Everyone who knows what he or she needs can combine features from one [Hypercard] stack to another into one custom-tailored product to solve personal computing problems."

Bachtold, one of two Macintosh users within his division, exemplifies the Mac's latest entry point into the corporate setting. Because of his insistence on using his Mac at work, National Semiconductor has agreed to provide Macintosh support in his division; Macs are already in use in other divisions within the company.

Doug Clapp of Minneapolis-based Foundation Publishing, Inc., publisher of Comic Strip Factory for the Mac, is not taking Hypercard lightly but does not think it has sounded a death knell for developers yet. According to Clapp, "Hypercard raises the ante for developers. It will force developers to make their programs easier to use and more customizable by users.

"After using Hypercard, users will be less content to do things the way developers think they ought to and will want to reconfigure their software. That's something different from producing a full-blown application, though. For that, you still need plenty of skill."

In the final analysis, the impact of Hypercard will depend not only on the way users implement the program itself but on what happens to the surrounding technology. The advent of read-or-write compact-disk/read-only memory and Integrated Services Digital Network 64K bit/sec. phone lines, for instance, will eliminate storage problems associated with size of stacks. ●

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Selected Mac business software

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(800) 874-8662 (Calif.)
Fourth Dimension
A multiuser relational data base. Includes a programming language, layout graphics, runtime and menu-customizing capabilities. Functions include Apple Computer, Inc. Appleshare compatibility, automatic data validation, password protection, mail-merge and application generation. Runs on the Macintosh SE, Mac II and Mac Plus.

AEC Management Systems, Inc.
(301) 428-3694
AEC Information Manager
A project-oriented data base that includes tools to automate, schedule, organize and track proposals, expenses and purchase orders, clients, equipment, correspondence, suppliers, submittals and revisions. Runs on any Macintosh with 1M byte of memory.

Ashton-Tate Corp.
(213) 329-8000
Dbase Mac
A relational data base for the Macintosh SE, Mac II and Mac Plus. Includes default and custom forms and layouts for data entry and reports, a procedural programming language, direct access of Dbase files from IBM compatibles and an on-disk tutorial. The package supports graphic images, text, date, time and logical data types and multivalued, formula and indexed fields.

Blyth Software, Inc.
(415) 571-0222
Omnis 3 Plus/Express
A programmable relational data base for creating single- or multiuser custom information management solutions. Provides users with a custom data base application for their customers. Includes an automatic applications generator that allows a nonprogrammer to create a relational data base application, complete with data entry screens, report generation and custom menus.

Borland International
(408) 438-8400
Reflex Plus
A relational data base management system with spreadsheet capabilities. Can be used to create data bases, access data and produce reports. Includes calculated, display-only and default fields, unlimited font selection, mailing lists, display formatting and automatic sorting. Works with data in multiple files and specifies complex calculations without requiring programming knowledge. Available for the Macintosh 512K, Mac 512KE, Mac XL, Mac Plus, Mac SE and Mac II.

Brock Software Products, Inc.
(818) 459-4210
Brock Keystroke Data Base and Report Generator
For those who frequently need to update many records at once, trade data between files or update files with totals from sales, accounts receivable and inventory files. Functions include batch updates, cross references, sorted reports and mail merge.

Brock Keystroke Advanced Encrypted Data Base
For those who need to get data to or from other applications or need to protect sensitive data. Combines data base and report generator functions with data protection and the ability to transfer data to and from other formats. Features include three password levels, automatic data encryption and entry from IBM Data Interchange Format and SYLK file formats.

1st Desk Systems, Inc.
(617) 533-2203
1st File 4.0 and 3.5 Programmable
Allows users to enter and edit data, sort multiple fields, produce reports from single or relationally joined files and perform arithmetic computing and macro analysis on up to 25 new fields using IF-THEN-ELSE arguments. Includes mail merge functions and produces reports with multiple headings. For the Macintosh.

1st Team 4.0
Similar to 1st File but is a multiuser tool. Automatically produces read-only work files from a central master file; supports large screen, color and blueprint lockout; hidden and mandatory fields; time and date calculations; indexed fields; and adjustable field placement and justification.

1st Gate 4.0
Allows users to leave messages, browse and transfer files, edit, add, delete and search 1st File/1st Team records remotely. Remote data base option is a transparent user interface that looks like the 1st File/1st Team programs. Supports autodial and autologon and automatically keeps track of all on-line activity.

Informix Software, Inc.
(415) 322-4100
Informix SQL
A relational data base management system based on industry-standard SQL. Informix 4GL — for developing data base applications — and Informix-ESQL/C, which enables developers to embed SQL statements in C programs, have been ported to the beta version of the Macintosh II running A/UX.

Microfinancial Flexware
(818) 961-0237
Flexware Development System
Fourth-generation data base development system with high-end applications for the Macintosh.

Microsoft Corp.
(206) 882-8080
Microsoft File
A data base management program that allows the user to record, organize, manage and sort information. Users can create files combining dates, numbers, text, calculated and indexed fields as well as store pages of information in one field, add or delete a field as data needs change and transfer data with all other Microsoft applications for the Mac. Features include on-line Help, built-in report generator and graphics.

Nantucket Corp.
(213) 390-7923
Mcmax
A relational data base management system. Creates data bases, manipulates structured data from multiple files and produces customized reports. Includes an Ashton-Tate Corp. Dbase-compatible programming language, an Assist mode, dialogue boxes, scroll bars, pull-down menus, a resource editor, customized alert and file boxes, cursor icons, Help screens and a built-in debugger. Supports data transfer to Microsoft Corp.'s Word, Microsoft File and Excel as well as many ASCII formats. For the Macintosh Plus, Mac XL, Mac SE and Mac II.

Nashoba Systems, Inc.
(800) 274-0610
Filemaker Plus
Combines data base management and professional forms generation. Data can be viewed and printed in an unlimited number of formats such as data entry screens, business forms, columnar reports, free-form reports, form letters, mailing labels and lists. Includes graphic reporting, automatic file lookups, automatic evaluation and updating of calculations and summaries and ability to exchange data in a variety of file formats. Runs on any Macintosh with at least 512K bytes of random-access memory, one 800K-byte drive or two 400K-byte drives.

Odesta Corp.
(312) 498-5615
Double Helix II
A relational data base. Includes tools needed to create applications using the full Mac visual environment. Includes open windows, automatic search and sorting, custom menus, on-screen Help, automatic and customizable forms, graphics, export and import of ASCII, SYLK and IBM Data Interchange Format files, real-time data updating and automatic data validation. For the Macintosh Plus, Mac SE and Mac II.

Multi-User Helix
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Paragon Concepts, Inc.
(619) 481-1477
QUED/M
A combination macro editor, text data base manager, appointment calendar and general productivity tool. Can open multiple files simultaneously, copy file and folder lists to create a catalog, find groups of characters or facts from any file and use meta characters or regular expression sets for complicated searches and replacements.

Provue Development Corp.
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Continued on page S16

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	Apple 2M-byte Memory Expansion Kit	All	2M bytes	Snap-in	$899
AST Research, Inc. (714) 553-0340	RM4	Macintosh II	1M to 4M bytes	Plug-in	Starts at $899
Dove Computer Corp. (916) 753-7918	Mac Snap	Macintosh Plus, SE, II, 512	2M bytes (512), 4M bytes (Plus, SE), 2M bytes (II)	Plug-in (Plus, SE, II), Snap-on (512, 512E)	$630-$1,406
Levco Corp. (619) 457-2011	One Plus One	Macintosh Plus	2M bytes	Plug-in	$375
	Monster Mac	Macintosh 128, 512	1M, 2M bytes	Clip-on	$712 (1M byte), $920 (2M bytes)
Mac Doctor Electronics (415) 964-3131	Brownstone	Macintosh 128, 512, 512E	1M to 4M bytes	Motherboard exchange	$529
	Brownstone XE	Macintosh Plus, SE, II	2M, 4M, 2M bytes	Plug-in	$580 (2M bytes additional memory)
	Rainstorm II	Macintosh II	1M bytes	Plug-in	$280
Macmemory, Inc. (800) 862-3636	Macplus Mega	Macintosh Plus	2M bytes	Plug-in	$499
	Multi-SIMMS	Macintosh Plus, SE, II	2M-byte sets	Plug-in	NA
Mac Pack Systems, Inc. (512) 257-3211	Plus-RAM	Macintosh Plus, SE, II	2M bytes	Plug-in	$895
Mac Products USA, Inc. (512) 832-0335	128K- to 4M-byte memory upgrade	Macintosh 128K	Varies depending on board	Manufacturer-installed	$115-$1,150, depending on board
	512K- to 4M-byte memory upgrade	Macintosh 512K, 512E, Plus, SE	Varies depending on board	Manufacturer-installed	$129-$1,150, depending on board
	2.5M-byte memory upgrade	Macintosh SE, II, Plus	2.5M bytes	Manufacturer-installed, snap-in	$370-$399, depending on board
	4M-byte memory upgrade	Macintosh SE, II, Plus	4M bytes	Manufacturer-installed, snap-in	$779-$799, depending on board
	5M-byte memory upgrade	Macintosh II	5M bytes	Manufacturer-installed, snap-in	$779-$799, depending on board
	8M-byte memory upgrade	Macintosh II	8M bytes	Manufacturer-installed, snap-in	$1,558-$1,599, depending on board
Microwise Communications (916) 722-5189	Arctic Mac	Macintosh Plus, SE, II	2M to 2M bytes	Plug-in	$800 (2M bytes memory)
National Semiconductor Corp. (408) 721-8093	NS8/16	Macintosh II	16M bytes	New bus card slot	$400 per Mbyte
Open Mac Hampshire, Inc. (415) 659-9449	RAM Plus 2	Macintosh Plus	2M bytes	Plug-in	$360
	RAM Plus 4	Macintosh Plus	4M bytes	Plug-in	$640
	RAM II	Macintosh Plus	2.5M bytes	Plug-in	$800
	RAM II Plus II	Macintosh Plus	4M bytes	Plug-in	$800
	RAM II	Macintosh SE	2.5M bytes	Plug-in	$800
	RAM II Plus II	Macintosh SE	4M bytes	Plug-in	$800
	RAM I	Macintosh II	2M bytes	Plug-in	$360
	RAM II Plus II	Macintosh II	4M, 6M, 8M bytes	Plug-in	$600, depending on model
Super Mac Technology (415) 964-8884	Enhance	Macintosh 512	2M bytes	Clip-on	$949
	Super RAM II	Macintosh Plus	1M to 2M bytes	—	$499
	Super RAM IV	Macintosh Plus	2M to 4M bytes	—	$999
Total Systems Integration, Inc. (800) 345-7280	TSI-2M	Macintosh Plus, SE, II	2M bytes	Plug-in	$850
	128K- to 512-byte upgrade	Macintosh 128	Up to 512 bytes	Clip-on	$440
	128K- to 512K-byte upgrade	Macintosh 128	Up to 512K bytes	Motherboard exchange	$125
Trimar U.S.A., Inc. (212) 645-7008 (All products distributed only in the New York area)	512K- to 2M-byte upgrade	Macintosh 128K, 512K	512K to 2M bytes	Manufacturer-installed	$400
	128K- to 2M-byte upgrade	Macintosh 128K, 512K	128K to 2M bytes	Manufacturer-installed	$500
	128K- to 1M-byte upgrade	Macintosh 128K, 512K	128K to 1M byte	Manufacturer-installed	$350
	128K- to 512K-byte upgrade	Macintosh 128K, 512K	128K to 512K bytes	Manufacturer-installed	$200
	512K- to 1M-byte upgrade	Macintosh 128K, 512K	512K to 1M bytes	Manufacturer-installed	$300

The companies included in this chart responded to a recent telephone survey conducted by *Computerworld*. Further product information is available from the vendors.

Accelerator boards

COMPANY	PRODUCT	RUNS ON	MICROPROCESSOR	CLOCK SPEED (IN MHz)	PERFORMANCE IMPROVEMENT	INSTALLATION METHOD	FULL SUPPORT FOR COPROCESSORS	DEDICATED RAM[1] (BUILT IN)	AMOUNT AND TYPE OF DEDICATED RAM	SOFTWARE COMPATIBILITY LIMITS (WHAT WILL NOT RUN)	WARRANTY OFFERED	PRICE
[illegible]	[illegible]	[illegible]	[illegible]	16	[illegible]	Plug-in	Yes	Varies according to version	1M-byte [illegible]	None	30-day	[illegible]
Leves Corp. (619) 457-2011	Prodigy Series	Macintosh 128, 512, Plus, SE	68020	18	More than 100 times faster	Plug-in (SE), clip-on (Plus, 512, 128)	Yes	Yes	1M to 4M bytes with coprocessor	None	90-day; one-year extended warranty available	$1,499-$3,499, depending on version
[illegible]	Turbo SE	[illegible]	[illegible]	10	100%	Plug-in	Yes	Yes	[illegible]	None	Full, one-year warranty	[illegible]
	Turbomac	Macintosh 512KE, Plus	[illegible]	10	More than 100%	Clip-on	Yes	Yes	2.5M bytes with optional expansion [illegible] CMOS, half on motherboard	None; games	Full, one-year warranty	[illegible]
Mac Peak Systems, Inc. (512) 327-3311	Orion	Macintosh SE	68020	18	400%	SE bus	Yes	Yes	Up to 32M bytes; 1M, 4M-byte SIMMs	None	Full, one-year warranty	$1,395
	Orion 25	Macintosh SE	68020	25	800%	SE bus	Yes	Yes	Up to 32M bytes; 1M-, 4M-byte SIMMs	None	Full, one-year warranty	NA
[illegible]	Jump [illegible]	Macintosh Plus, 512	[illegible]	—	—	Clip-on	Yes	No	NA	—	120-day; full technical support	[illegible]
Novy Systems, Inc. (904) 427-2388	Mac 20 MX	Macintosh 512E, SE, Plus	68020	12, 16, 20, 24 (options)	400% to 1,000%	Plug-in, clip-on	Yes	Yes	1M, 4M bytes	None	Six months, money-back	$995-$4,995
[illegible]	[illegible]	[illegible]	[illegible]	10	[illegible]	Clip-on (Plus), internal expansion port (SE)	Yes	No (plus keyboard mode; provide RAM upgrades on motherboard to overcome RAM problem)	NA	None	Full, 30-day warranty	[illegible]
Total Systems Integration, Inc. (503) 345-7395	TSI-020	Macintosh 512E, Plus, SE	68020	12, 16, 20, 24	400%	Clip-on	Yes	Yes	1M, 4M bytes	None	90 days, parts and labor	$695 (12 MHz, no RAM)

[1]Random-access memory [2]Single in-line memory modules

The companies included in this chart responded to a recent telephone survey conducted by *Computerworld*. Further product information is available from the vendors.

Continued from page S14

cally posts an entry to any form throughout the entire system. Can provide reports that analyze financial data, compare it with the firm's past performance and industry norms and suggest a course of action. Multiuser version available.

Microfinancial Flexware
(818) 961-0237
Macflexware
Multiuser high-end accounting and data base applications include accounts receivable, accounts payable, general ledger, inventory, payroll, job costing, order processing and purchasing. All use Macintosh interface and integrate to Microsoft Corp.'s Excel and other products.

Monogram Software, Inc.
(213) 533-5120
Business Sense
Integrated accounting package for the Macintosh. Includes general ledger, accounts receivable, accounts payable and payroll modules. Features include multiple windowing, transactions limited only by disk space, error capture, ledger searches, mailing labels and Help windows. Can be used with other Macintosh software.

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A personal and small-business financial management software program. Features include unlimited number of transactions, descriptors and autosets, multiple windowing and password protection. Modules include double-entry accounting, assets, liabilities, expenses, income, checking, income statements, balance statements, year-to-date summaries, cash-flow budget analysis and forecasting. For any Macintosh with 512K bytes or more of random-access memory.

SBT Corp.
(415) 331-9900
SBT Data Base Accounting Library
Includes the following modules: time and billing, sales order processing, billing and inventory control and accounts receivable, purchase order processing, accounts payable and check writing, payroll and labor accounting, general ledger and finance, assets and depreciation, project and job cost accounting, tenant and unit management, material requirements and planning. Available for Ashton-Tate Corp.'s Dbase III Plus; Fox Software, Inc.'s Foxbase Plus; Wordtech Systems, Inc.'s DBXL and Quicksilver; and Nantucket Corp.'s Clipper and Mcmax. For the Macintosh 512K and the Mac Plus.

Shopkeeper Software
(904) 222-8808
Shopkeeper
A single program that includes accounts receivable, inventory, billing, customer files, point of sale and invoicing. Used for retailing, wholesaling, services and professional firms.

Softsync, Inc.
(212) 685-2080
Accountant, Inc.
An integrated accounting package for the Macintosh 512K. Includes accounts receivable, accounts payable, general ledger and inventory control modules on one disk. Used to maintain journals, ledgers and reports. Monitors cash flow, receivables aging, income statements and financial ratios. Includes invoices, checks, statements, reports, agings, analysis, exporting and password protection.

Integrated spreadsheets

Data Tailor, Inc.
(800) 443-1022
Trapeze
Allows users to prepare, evaluate, analyze and present information on one worksheet. Includes built-in spreadsheet and data base capabilities, professional desktop publishing with live calculations and charts for presentations in single or multiple pages and 11 basic chart types to graphically present information. Runs on the Macintosh 512KE, Mac Plus, Mac SE and Mac II (in color).

Lotus Development Corp.
(617) 577-8500
Jazz
An integrated spreadsheet package. Allows users to share data between Jazz and Lotus Development Corp.'s 1-2-3 and Symphony 1.1 as well as transfer 1-2-3 1A, Symphony 1.0 and SYLK files for use with Jazz. Includes a worksheet, word processing, a data base, communications and graphics on one disk. Includes hard-disk support (without a key disk in floppy drive), Jazz programs and system files on one dual-side disk, larger Jazz documents, Apple Computer, Inc. Laserwriter printing, support of numeric keypad and new Macintosh keyboard, support of Apple hierarchical file system. For the Macintosh Plus,

Microsoft Corp.
(206) 882-8080
Microsoft Works
Integrates word processing and data base spreadsheet with graphics and communications applications in a single program. Includes Help commands, multiple windows, a variety of type styles, fonts and sizes, sorting features, charting functions of up to five different formats and "what-if" scenarios. Runs on any Macintosh with 512K bytes of memory.

Excel
Combines spreadsheet with business graphics and data base functions in one program. Includes a charting program that offers 42 different chart types with text, legends, arrows, headers and footers. Allows users to change fonts, orientation, range, scale, patterns and locations. Supports two-way compatibility with Lotus Development Corp.'s 1-2-3 in WKS format, ASCII text formats and SYLK files. Features include Search and Sort functions, Help commands, macros, Undo functions, windows, cell protection, display options, variable column width, linking capabilities and number, date and time formats.

Rebus Development Corp.
(408) 263-2207
Parameter Manager Plus
A technical worksheet used in fields such as engineering, business, technical analysis and medicine. Functions include trending, forecasting, patient monitoring and product testing; also graphics, data analysis, built-in command menus, relational spreadsheet linking, SQL control charting, technical graphing and sorting. For the Macintosh II, Mac SE, Mac Plus and Mac 512KE.

Computerworld First with the news that's important to you.

Computerworld:

1-2-3 to go unprotected

BY DOUGLAS HARNEY
CW STAFF

CAMBRIDGE, Mass. — Relenting to years of continuous pressure from corporate software buyers and users groups, Lotus Development Corp. is preparing to remove all cop[illegible] from its new

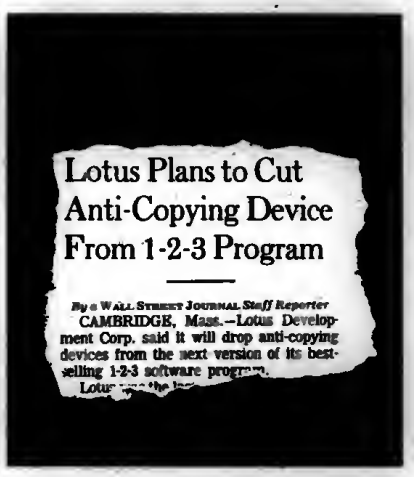
first-quarter 1988 release.

"There's a possibility we would release it before OS/2 if [the operating system's] availability gets blown out of the water," said Michael Kolowich, vice-president of corporate marketing and information services

Continued on page 10

September 14, 1987

Wall Street Journal:



Lotus Plans to Cut Anti-Copying Device From 1-2-3 Program

By a WALL STREET JOURNAL Staff Reporter

CAMBRIDGE, Mass.—Lotus Development Corp. said it will drop anti-copying devices from the next version of its best-selling 1-2-3 software program.

Lotus [illegible]

September 16, 1987

PC Week:

Lotus Will Remove Copy Protection From New 1-2-3

Competition, User Backlash Forces Lotus To Follow Suit

By Beth Freedman

CAMBRIDGE, Mass.—Succumbing to user demand, Lotus Development Corp. will drop copy protection from future [illegible]

September 22, 1987

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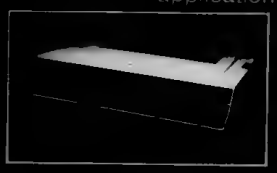

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The individual should come from an IBM MVS/XA environment with a minimum of two years in depth experience in the installation and implementation of CICS/VS and a background in NCP/VTAM. Additional axperience in JES2, ISPF, RACF and SMP/E would be a definite plus.

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InfoWorld is the weekly newspaper edited for personal computer professionals at organizations using multiple systems. It has a total audience (subscribers and pass-along readers) of 420,000, including PC managers, software developers and other PC-oriented professionals.

Network World is the news and features weekly for larger users of communications and networking. Its 220,000 readers (including subscribers and pass-along readers) include voice and data communications managers and specialists as well as communications consultants.

Digital News is a biweekly newspaper for computer professionals who work with the VAX line of computers from Digital Equipment Corporation. Total readership, including subscribers and pass-along readers, is over 210,000, including computer executives and managers, systems analysts, programmers, engineering executives and staff, and other VAX-oriented computer professionals.

Federal Computer Week is edited for information systems executives and staff who work in and sell to the federal government. Its weekly circulation includes MIS executives and managers, as well as systems analysts, programmers, software developers, communications specialists and other information systems professionals. Total readership (including paid and pass-along) exceeds 120,000.

Computer Currents is a group of regional publications edited to meet the needs of business and professional users of personal computers in the region covered.

Computer Currents/Northern California Edition is published biweekly and has a total circulation of 75,000. Total readership exceeds 225,000.

Computer Currents/Southern California Edition is published monthly and has a total circulation of 78,000, with a total readership of 234,000.

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Circulation plus projected pass-along audience

	EAST	MIDWEST	WEST	TOTAL U.S.
Computerworld	293,032	229,907	127,135	650,074
InfoWorld	171,784	113,414	134,802	420,000
Network World	108,542	62,221	49,237	220,000
Subtotal	**573,358**	**405,542**	**311,174**	**1,290,074**
Digital News	106,468	52,252	53,280	212,000
Federal Computer Week	74,412	20,883	25,083	120,378
Computer Currents				
Northern California Edition			225,000	225,000
Southern California Edition			234,000	234,000
Boston Edition	120,000		120,000	
Total	**874,238**	**478,677**	**848,537**	**2,201,452**

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1) *Computerworld* contract advertisers — Determine your discounted line rate, by deducting the difference between *Computerworld's* open line rate and your current contract rate from the above combination rates.

Example

$12.60 open line rate
− 11.35 contract rate
$ 1.25 difference

Your discounted rate of a combination of two publications would be $15.00 − $1.25 = $13.75.

2) If your combination buy does not include *Computerworld*, your Computer Careers national rate may be lower. To calculate, start by adding the stand-alone rates of the respective publications (*InfoWorld* — $9.29, *Network World* — $5.00, *Digital News* — $5.00, *Federal Computer Week* — $3.60). Then deduct 10% from the total.

Example

$ 9.29 InfoWorld
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$14.29 Total
− 1.43 less 10%
$12.86 discounted rate

To put the IDG Communications Computer Careers Network to work for you, call the sales office nearest you — or contact John Corrigan, Recruitment Advertising Sales Director, at 617-879-0700. Just *one* quick phone call can give you all the information you need on running your recruitment advertising — regionally or nationally — in up to eight leading industry newspapers.

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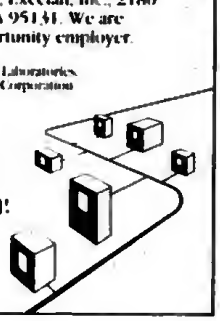

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Senior Vice President/
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Michael Gill is Senior Vice President and Creative Director of Thompson Recruitment Advertising, based in Los Angeles, California. In 1986, Thompson won more EMA awards than its three largest national competitors— combined. The company's advertising goal is a simple but demanding one. To create the most effective recruitment advertising in the marketplace

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1000 DP Opportunities

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For Immediate Consideration Call Mr. G. Keller at 213-414-4255 or 414-1171, Mon.-Fri., 7:30 am — 4:00 pm

Our continuous advances in current and new research and development programs for advanced aircraft projects such as the just-awarded National AeroSpace Plane, the AC-130U Gunship Project, X-31, U.S. Air Force's B-1B and other advanced programs have created the following opportunities at **Rockwell International Corporation's North American Aircraft Operations in El Segundo:**

Software System Designer (600887)

Primary responsibility will include coordination and design of all system software and documentation, as well as the test data base design and construction. Requires strong analytical skills and minimum 10 years experience in computer systems requirements definition, design, development and implementation.

Engineering Information System Analyst (601000)

Responsible for development of functional and informational architectures, models and requirements, prototype system development and implementation of Integrated Design Support System (IDS) concepts. Background in engineering, manufacturing, and logistics functional areas necessary. Requires BS/MS in CS, engineering or information science with minimum 10 years experience including aircraft design and data modeling.

Data Base Management System Analyst (600886)

Responsible for acquisition, design, test, evaluation and implementation of advanced technical engineering data bases and DBMS support for the Integrated Design Support System (IDS) development. Will also provide assistance to users in retrieving data from currently available DBMS's. BS/MS in engineering, CS, or information management and minimum 7 years experience in DBMS required. Background in engineering and relational data base technology is necessary.

IDS Software System Programmers (600999)

Responsible for developing integration code for the Integrated Design Support System (IDS). Requires background in standard programming languages such as Ada, "C", and FORTRAN. Position requires 7-10 years experience in software programming.

MODEM USERS: For immediate consideration, use your computer and modem to submit your resume. Our on-line Career Center can be accessed 24-hours a day, 7-days a week. Just call (modem only) **213-372-4050** and type **GO ROCKWELL** upon entry.

Rockwell International offers excellent compensation and benefits. If unable to call, please send your resume to: **Valentino B. Martinez, Employment ZK-22, Dept. CW1102, Rockwell International, North American Aircraft Operations, 100 N. Sepulveda Blvd., El Segundo, CA 90245.** Equal Opportunity Employer M/F. U.S. Citizenship Required.

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We have recently completed a large strategic planning study and have a significant backing of technical and application development projects. We are transitioning from a largely maintenance mode to an aggressive development mode. We are seeking talented individuals for the following:

COMPUTER OPERATIONS & SUPPORT

- ***Vendor Software Support Analysts***

3-6 years experience in vendor software support or applications development. MVS and/or VM vendor software knowledge and support skills for products such as COBOL, SAS, PROFS, and graphics packages are preferred. CICS applications knowledge a plus. Good interpersonal, verbal and written communication skills required. Will be responsible for vendor software evaluation installation, customization, and documentation and will serve as technical consultant for application programmers and end-users.

- ***Change Management Analyst***

3-6 years experience desired in: IBM large systems (MVS or VM); project management; change management or problem management; change/problem management software installation, and IBM info/management UCC-4 NETMAN or Peregrine PNMS III. Good written and verbal communication skills required. Will provide project leadership and technical advice in the installation of hardware, system software, applications systems, data base, and network.

- ***Performance Analyst***
- ***Capacity Planning Analyst***
- ***MVS Systems Programmer***

4-5 years in the technical computer area and at least 2 years of systems programming experience or performance experience. Prefer a 4-year degree and good interpersonal skills. Experience with VM/HPO, MVS/XA, and strong oral and written communication skills desirable. Project planning experience highly desirable. Will analyze disk placement and its effects on performance and the performance of inhouse written code and identify bottlenecks created by code, will monitor and report on the status of the achievement of performance and reliability goals for the network components, VM/MVS system, and major subsystems such as CICS or DATACOM. Will work with other individuals to manage the configuration of both VM system and MVS/XA system.

Additionally, Performance Analyst will provide tuning and performance expertise for an operating system of MVS/XA or VM/CMS. Experience with VM tuning products such as Smart and Omegamon/VM would be helpful.

CP&L offers competitive salaries, excellent benefits, and opportunities to advance. If interested in becoming part of our important team of professionals, send resume with salary requirements to: **Susie Brown, Recruitment Representative, Dept. CW11/2, CAROLINA POWER & LIGHT COMPANY, P.O. Box 1551, Raleigh, NC 27602.** An Equal Opportunity/Affirmative Action Employer.

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DATA PROCESSING

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MS in Computer Science or Electrical Engineering. 4-6 years experience with development of distributed computing systems for Graphic Intensive Applications.

Sverdrup Technology, Inc. is dedicated to technical excellence and offers an excellent fringe benefit program including a 401(K) savings plan. Those interested in applying for this career opportunity should send resume with salary history and requirements to:

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Positions are also available for specialists with significant "C" and/or advanced language programming experience in a UNIX environment. Additional positions are available for those with RMX/FLM, FORTRAN or Pascal scientific applications experience.

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ADDITIONAL QUALIFICATIONS:
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Mail your résumé to Jerry Ward, PRC, 1001 Executive Drive, Sierra Vista, AZ 85635. U.S. citizenship required. An Equal Opportunity Employer M/F/H/V.

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To help this operating unit run efficiently, we need experienced candidates to fill our current openings which include:

BUSINESS SYSTEM ANALYSTS
(Multiple Positions).

Qualified candidates should possess the following:

- **BA/BS in Business/Computer Science**
- **Focus on Marketing Research techniques**
- **Ability to analyze external and internal market data**
- **Knowledge of EXPRESS desired**
- **Prefer food industry experience**
- **Proven record in problem solving & design**
- **Excellent interpersonal skills required.**

PROGRAMMER ANALYSTS
(Multiple Positions & Levels)

Qualified candidates should possess the following:

- **BA/BS/AS Business/Computer Science**
- **Mainframe, mini and/or PC experience MVS, VM, System 36, PC-DOS**
- **Two or more of the following languages: NOMAD 2, ADABAS NATURAL, DYLAKOR, SAS, dBase III, SYMPHONY, other 4th GL's**
- **Experience in development, minimum of 2-6 years dependent on position**
- **Application experience should include one or more of the following: Marketing, Finance or Manufacturing**

MANAGER, MARKET RESEARCH

Qualified candidates should possess the following:

- **BA Business/Marketing/Computer Science**
- **Three to five years experience in organizing and presenting market analysis**
- **Management and interpersonal skills must be apparent**
- **Knowledge of various syndicated data sources and ability to correlate**
- **Experience in 4th generation languages, primarily EXPRESS**
- **Highly service-oriented, responsive and motivated individual**

GROUP MANAGER, FINANCE MARKETING

Qualified candidates should possess the following:

- **BA/BS Business/Marketing/Computer Science**
- **Six years management experience with overall project experience of 10 years**
- **Must possess both oral and written communication skills**
- **Working knowledge of Marketing, Market Research and financial applications**
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Systems Designer for PC/LAN Applications

The prime responsibility for this individual will be to assume the leadership role in the design of complex applications. Using our structured methodology, you will produce data flow diagrams and structure charts. Subsequently, you will coordinate the development and testing of the application systems.

Applicants should have a college degree plus 5 years experience in development of applications, including at least 2 years systems design in a structured environment, 2 years 'C' programming experience, and exposure to distributed processing, preferably using Local Area Networks.

Programmers for PC/LAN Applications

Applications for the network environment are developed in 'C' using BTRIEVE. The prime responsibility for these positions is to participate in the development and testing of programs, using our structured methodology (STRADIS).

Applicants should have 2 years 'C' programming experience, along with a Bachelor's Degree. Experience with MS/DOS, BTRIEVE file access or a structured methodology is desirable.

Senior Network Engineers

Suitably qualified senior engineers are required to install and support our Kingdom-wide data communications network, consisting of IBM PS2 workstations, Racal-Milgo communications equipment and Ungermann-Bass Local Area Network equipment.

Applicants should have a relevent degree plus 5 years applicable experience with exposure to at least 2 of the following areas:

- Support of IBM PC workstations in a network environment
- Data communications including Racal equipment
- Ethernet based Local Area Networks

Data Processing Trainers

These positions involve the instruction of young Saudi DP professionals in data processing theory and practice.

Applicants should have a BS in Computer Science or a related field, plus significant data processing experience. In addition, 2 years of data processing training experience is required, preferably involving a practical on-the-job training approach. Knowledge of analysis and programming methods and techniques is expected. Specific exposure to MVS, CICS, ADABAS, NATURAL, MS/DOS, 'C' or Local Area Networking is desirable.

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Please send resume with present salary, indicating position for which you are applying, to Personnel Dept. CW-11/2, SYSOREX INTERNATIONAL, INC., 10590 N. Tantau Ave., Cupertino, CA 95014. U.S. CITIZENSHIP REQUIRED. Principals only please.

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LOOK WHO'S LOOKING AHEAD

United Airlines' Maintenance Operations Center at San Francisco International Airport is the largest aircraft maintenance facility in the world. Our MIS Division plays a key role in keeping it at the forefront of the airline industry. To meet these goals, we need experienced MIS Professionals for the following positions

SR. DATABASE ANALYST

Will design and implement large, complex database systems, establish direction for DB architecture, maintain data dictionary, and represent DB administration in complex systems analysis efforts. Candidates must have 3-5 years DBA experience in an IDMS environment

PROGRAMMER ANALYST/ SR. PROGRAMMER ANALYST

Will develop new applications and maintain existing systems. Requires minimum 2-3 years applications development experience in an on-line COBOL environment. Unisys EXEC-8, TIP, DMS-1100 or IBM, MVS/XA, IDMS, ADS/O experience preferred.

SR. SYSTEM DESIGN ANALYST

Will develop computer systems involving mathematical modeling of scheduling problems and be involved in converting "Prototype" models into production systems. Subsequent to modeling, will design and develop software for high level numerical analysis. Must have MS in Computer Science or Mathematics with 1-2 years experience in model development and related areas

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Mayo Clinic Rochester, MN

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IBM

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- Microcomputer Support area—requires computer science/related degree with 1-2 years personal computer experience. Familiarity with mainframes, data bases and a variety of PC software beneficial. Strong personal communication skills required to train and provide user support.

DEC

- Research and Patient Care Systems areas—require computer science or related degree, VAX, VMS with 2 years experience. Background in scientific/research program beneficial utilizing Fortran or PASCAL. Strong personal communication skills required.

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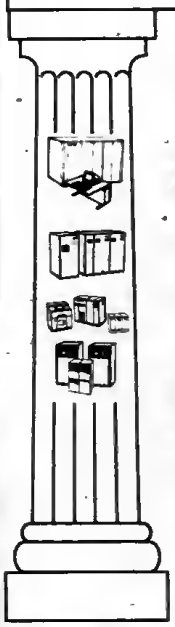

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Software must run on IBM 4381 P2/R14 and support MVS/SP with capability to interface in future with MVS/XA, VM/SP, VM/XA.

Proposals will be received by Human Resources Administration Office of Data Processing until 5:00 p.m. November 23, 1987.

A proposer's conference will be held at 10:00 a.m. November 16, 1987 at the Office of Data Processing, 111 Eighth Avenue, 6th Floor, N.Y.C.

Requests for proposals may be obtained from the HRA Office of Data Processing, 111 Eighth Avenue, N.Y., N.Y. 10011. Attention: Delia King. Telephone No. (212) 206-3746/3747.

RFP2

Wayne County Community College is in the process of improving and extending computer services to its academic and administrative support areas.

The college intends to purchase new hardware, data communications including networks, terminals and modems. Additionally to facilitate transition, time-sharing services are included in this request for proposal.

The RFP (request for proposal) consists of five (5) major components. (1) Mainframe Hardware-Administrative, (2) Mainframe Hardware-Academic, (3) Information Resource Network, (4) Time-sharing Service and (5) Terminals and Printers. Vendors may respond to all five or any one of the major components.

A copy of the RFP will be available for pickup beginning October 19, 1987 daily between the hours 8:30 a.m. to 4:30 p.m. at Wayne County Community College, 801 West Fort St. Detroit, MI 48226, Fourth Floor, Purchasing Dept.

A pre-bid conference will be held on October 28, 1987 at 2 p.m. (same location as listed above). Proposals are due November 23, 1987 at 2 p.m.

Please contact Thomas E. Howard Jr. Director of Purchasing with any questions that you may have at (313) 494-2780.

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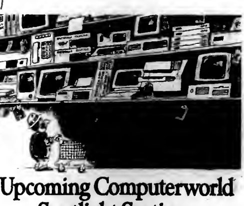

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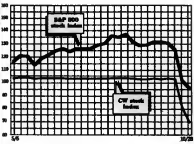

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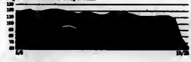
Communications

Computer Systems

Software and DP Services

Semiconductors

Peripherals and Subsystems



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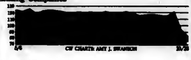

CW CHARTS: AMY J. SWANSON

Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, OCTOBER 28, 1987

EXCH		52-WEEK RANGE (1)		PRICE CLOSE OCT. 28 1987	WEEK NET CHNGE	WEEK PCT CHNGE
	Communications and Network Services					
N	AMERICAN INFO TECHS CORP	110	74	88.75	-6.25	-6.25
Q	ANDREW CORP	19	11	10.75	-1.50	-1.5
Q	ARTEL COMM CORP	6	6	1.63	-0.25	-0.25
N	AT&T	38	20	28.63	-0.13	-0.125
Q	AVANT GARDE COMP INC	6	6	2.16	-0.88	-0.875
Q	AVANTEK INC	19	7	8.50	-1.13	-1.125
N	A: DIN CORP	38	10	17.63	-0.75	-0.75
N	BELL ATLANTIC CORP	80	61	71.00	-1.88	-1.875
N	BELLSOUTH CORP	44	29	35.75	-2.75	-2.75
Q	FIBRONICS INT	28	12	12.00	-8.00	-8
Q	COMPRESSION LABS INC	6	6	3.75	-0.63	-0.625
Q	COMPUTER NETWORK TECH	6	6	2.38	-0.25	-0.25
N	CONTEL CORP	45	25	27.50	-2.75	-2.75
Q	DATA SWITCH CORP	6	4	3.75	-1.50	-1.5
Q	DIGITAL COMM ASSOC	49	20	20.00	-8.00	-8
Q	DYNATECH CORP	44	14	14.50	-7.50	-7.5
Q	EQUATORIAL COMM CO	6	6	2.75	-0.13	-0.125
Q	GANDALF TECHNOLOGIES	11	5	5.38	-0.50	-0.5
Q	GENERAL DATACOMM INDS	14	3	3.75	-1.63	-1.625
N	GTE CORP	45	29	35.25	-1.38	-1.375
Q	INFOTRON SYS CORP.	12	6	5.00	-2.00	-2
N	ITT CORP	28	40	49.63	-2.25	-2.25
N	M A COM INC	18	6	7.88	-1.25	-1.25
Q	MCI COMMUNICATIONS CORP	12	5	8.25	-0.75	-0.75
Q	MICOM SYS INC	19	7	7.60	-1.16	-1.125
Q	NETWORK SYS CORP	16	7	7.63	-1.00	-1
N	NORTHERN TELECOM LTD	24	14	18.38	-0.75	-0.75
Q	NOVELL INC	30	11	12.00	-7.00	-7
N	NYNEX CORP	79	58	67.63	-2.88	-2.875
N	PACIFIC TELESIS GROUP	34	6	28.50	-1.50	-1.5
N	PARADYNE CORP	6	4	4.13	-0.25	-0.5
A	PENRIL CORP	6	1	1.38	-0.88	-0.875
N	PLESSEY PLC	41	24	34.25	-0.13	-0.125
N	SCIENTIFIC ATLANTA INC	20	6	8.75	-1.88	-1.875
N	SOUTHWESTERN BELL CORP	46	22	37.00	-1.88	-1.875
Q	3 COM CORP	28	12	13.50	-3.38	-3.375
N	TIMEPLEX INC	41	17	18.00	-4.88	-4.875
Q	UNGERMANN BASS INC	16	6	9.88	-1.38	-1.375
N	U S WEST INC	60	43	48.25	-2.75	-2.75
	Computer Systems					
Q	ALLIANT COMPUTER SYS	37	6	8.25	-1.00	-1
Q	ALPHA MICROSYSTEMS	6	6	2.00	-0.88	-0.875
Q	ALTOS COMPUTER SYS	17	6	6.63	-0.50	-0.5
A	AMDAHL CORP	58	18	23.13	-7.88	-7.875
Q	APOLLO COMPUTER INC	29	6	8.38	-2.13	-2.125
Q	APPLE COMPUTER INC	60	17	32.00	-4.75	-4.75
N	BOLT BERANEK & NEWMAN	30	12	14.00	-2.50	-3.5
Q	BRITTON LEE INC	6	6	2.00	-0.38	-0.875
N	COMPAQ COMPUTER CORP	75	15	40.50	-8.50	-8.5
Q	COMPUTER AUTOMATION INC	17	3	5.50	-0.88	-0.875
A	COMPUTER CONSOLES INC	12	2	2.88	-0.75	-0.75
Q	CONCURRENT COMP CORP	24	12	11.75	-4.00	-4
N	CONTROL DATA CORP DEL	39	10	21.00	-8.25	-3.5
Q	CONVERGENT TECH	16	3	3.25	-1.00	-1
Q	CONVEX COMPUTER CORP	22	6	7.50	-0.75	-0.75
N	CRAY RESH INC	135	47	63.00	5.00	8
Q	DAISY SYS CORP	12	6	5.25	-1.00	-1
N	DATA GEN CORP	39	16	19.75	-1.12	-1.125
N	DATAPOINT CORP	6	3	3.00	-1.25	-1.25
N	DIGITAL EQUIP CORP	200	97	125.50	-8.00	-8
N	FLOATING POINT SYS INC	17	4	4.00	-1.00	-1
N	GOULD INC	24	8	12.16	-0.88	-0.875
N	HARRIS CORP	43	24	24.88	-0.88	-0.875
N	HEWLETT PACKARD CO	74	28	48.00	-0.88	-0.875
N	HONEYWELL INC	81	46	60.00	-11.75	-11.75
N	IBM	175	102	118.00	-3.00	-2
Q	INFORMATION INTL INC	17	10	10.00	-1.50	-1.5
Q	IPL SYS INC	6	3	2.00	-0.25	-0.25
Q	MASS COMPUTER CORP	14	6	7.00	-0.88	-0.875
Q	MATSUSHITA ELEC INDL LTD	139	98	129.63	-12.38	-12.375
Q	MEGADATA CORP	7	2	3.25	-0.25	-0.25
Q	MENTOR GRAPHICS CORP	30	14	13.50	-0.88	-0.875
N	NBI INC	14	4	4.50	-0.50	-0.5
N	NCR CORP	80	44	64.00	-6.25	-6.25
N	PRIME COMPUTER INC	31	16	13.38	-1.25	-1.25
Q	PYRAMID TECHNOLOGY	13	4	6.00	-1.50	-1.5
Q	STRATUS COMPUTER	41	16	17.25	-4.00	-4
Q	SUN MICROSYSTEM INC	46	14	24.00	-0.50	-0.5
Q	SYMBOLICS INC	6	1	1.00	-0.50	-0.5
N	TANDEM COMPUTERS INC	39	17	21.50	-2.38	-2.375
N	TANDY CORP	57	31	34.00	-4.50	-4.5
N	ULTIMATE CORP	37	14	17.25	-4.38	-4.375
N	UNISYS CORP	48	24	29.00	-0.88	-0.875
A	WANG LABS INC	16	10	10.88	-2.38	-2.375
	Software & DP Services					
Q	ADVANCED COMP TECH	6	6	4.16	-0.13	-0.125
N	ADVANCED SYS INC	35	14	23.00	-1.00	-1
N	AGS COMPUTERS INC	30	11	11.00	-6.25	-6.25
Q	AMERICAN MGMT SYS INC	20	8	9.88	-3.38	-3.375
Q	AMERICAN SOFTWARE INC	22	6	8.16	-3.63	-3.625
N	ANACOMP INC	11	3	3.00	-1.25	-1.25
Q	ANALYSTS INTL CORP	10	4	4.38	-1.38	-1.375
Q	ASHTON TATE	30	16	19.50	-3.50	-3.5
Q	ASK COMPUTER SYS INC	17	6	7.13	-0.75	-0.75
Q	AUTODESK INC	39	16	13.00	-7.00	-7
N	AUTO DATA PROCESSING	58	18	39.13	1.88	1.875
Q	BOOLE & BABBAGE INC	16	6	4.75	-3.50	-3.5
N	COMPUTER ASSOC INTL INC	37	12	22.88	0.00	0
Q	COMPUTER HORIZONS CORP	15	6	8.88	-0.88	-0.875
N	COMPUTER SCIENCES CORP	73	37	43.00	-6.50	-6.5
N	COMPUTER TASK GROUP INC	18	10	8.75	-2.25	-2.25
Q	COMSHARE INC	39	11	12.50	-3.00	-3
N	CULLINET SOFTWARE INC	14	6	6.75	-1.50	-1.5
Q	CYCARE SYS INC	10	6	5.38	-0.38	-0.375
Q	DUQUESNE SYS INC	33	10	12.75	0.00	0
Q	ENDATA INC	18	6	9.00	0.00	0
N	GENERAL MTRS (CLS E)	51	24	31.00	-6.25	-6.25
Q	HOGAN SYS INC	17	6	6.63	0.25	0.25
Q	INFORMIX CORP	31	6	15.00	-4.00	-4
Q	INTELLICORP INC	11	3	3.00	-0.75	-0.75
Q	KEANE INC	10	5	8.25	0.00	0
Q	LOTUS DEV CORP	40	16	19.50	-0.75	-0.75
Q	MANAGEMENT SCI AMER	21	6	8.00	-2.13	-2.125
Q	MICRO PRO INTL CORP	6	6	3.00	-0.75	-0.75
Q	MICROSOFT CORP	79	18	39.50	-13.75	-13.75
Q	NATIONAL DATA CORP	24	16	20.75	-3.50	-3.5
Q	ON LINE SOFTWARE INTL INC	22	7	10.75	-2.38	-2.375
Q	ORACLE SYS CORP	28	8	16.75	-7.25	-7.25
N	PANSOPHIC SYS INC	28	11	11.00	-0.50	-0.5
Q	POLICY MGMT SYS CORP	30	15	15.50	-3.00	-3
Q	PROGRAMMING & SYS INC	14	5	7.50	-2.00	-2
Q	REYNOLDS & REYNOLDS CO	28	15	15.00	-0.75	-0.75
Q	SEI CORP	16	6	11.75	-2.38	-2.38
Q	SHARED MED SYS CORP	33	10	20.00	-3.50	-3.5
Q	SOFTWARE AG SYSTEMS INC	16	9	9.00	-0.50	-0.5
Q	SOFTWARE PUBG CORP	17	5	8.00	-1.50	-1.5
A	STERLING SOFTWARE INC	18	6	6.50	-1.75	-1.75
Q	SUNGARD DATA SYS INC	61	20	30.00	-3.00	-3
Q	SYSTEMATICS INC	30	15	19.00	-1.75	-1.75
N	SYS. SOFT INC.	34	7	7	-4.00	-4
N	URS CORP	33	11	10.63	-2.80	-3.5
Q	VM SOFTWARE INC	46	6	8.50	-1.13	-1.125
	Semiconductors					
N	ADV MICRO DEVICES INC	29	10	11.00	-1.00	-1
N	ANALOG DEVICES INC	24	10	10.50	-1.00	-1
Q	ANALOGIC CORP	13	6	9.80	-1.00	-1
Q	INTEL CORP	33	20	31.75	-3.25	-3.25
Q	LSI LOGIC CORP	17	7	7.00	-1.88	-1.875
N	MOTOROLA INC	74	28	41.00	-2.75	-2.75
N	NATL SEMICONDUCTOR	22	8	11.25	-1.13	-1.125
N	TEXAS INSTRS INC	80	36	42.50	2.75	2.75
A	WESTERN DIGITAL CORP	33	12	13.50	-3.38	-3
	Peripherals					
Q	ALLOY COMP.	12.75	4.5	5.25	-1.75	-1.75
N	AM INTL INC	6	3	5.50	-1.00	-1
Q	AST RESH INC	23	5	6.63	-3.38	-3.375
Q	AUTO TROL TECH CORP	6	3	3.00	-0.88	-0.875
Q	BANCTEC INC	16	6	5.50	-0.75	-0.75
Q	CIPHER DATA PRODS INC	18	4	4.75	-1.25	-1.25
A	COGNITRONICS CORP	6	6	2.63	-0.13	-0.125
N	COMPUGRAPHIC CORP	39	10	22.38	-1.63	-1.625
N	COMPUTERVISION CORP	23	6	6.50	-1.88	-1.875
N	DATAPRODUCTS CORP	24	7	7.00	-0.75	-0.75
A	DATARAM CORP	6	6	6.50	-0.50	-0.5
N	DECISION INDS CORP	13	4	5.50	-0.38	-0.375
N	EASTMAN KODAK CO	71	40	52.88	-3.38	-3.375
Q	E M C CORP MASS	29	10	13.00	-2.75	-2.75
Q	EMULEX CORP	10	4	4.13	-1.25	-1.25
Q	EVANS & SUTHERLAND	40	10	18.63	-1.13	-1.125
Q	IDOT CORP	13	3	4.25	-1.38	-1.375
Q	INTERLEAF INC	24	6	12.00	-1.75	-1.75
Q	IOMEGA CORP	6	1	1.63	-0.25	-0.25
Q	LEE DATA CORP	10	3	3.38	-0.25	-0.25
Q	MASSTOR SYS CORP	6	1	1.63	-0.31	-0.313
Q	MAXTOR CORP	24	6	8.75	-2.25	-2.25
Q	MICROPOLIS CORP	44	12	18.00	-8.25	-8.25
Q	MINISCRIBE CORP	18	6	6.00	-1.63	-1.625
N	MINNESOTA MING & MFG CO	84	45	68.00	-4.50	-4.5
N	MSI DATA CORP	24	11	12.00	-3.63	-3.625
Q	PRIAM CORP	6	1	1.25	-0.63	-0.625
Q	PRINTRONIX INC	18	6	8.00	-1.38	-1.375
Q	QMS INC	27	16	12.50	-3.63	-3.625
Q	QUANTUM CORP	28	6	9.25	-1.25	-1.25
Q	RAMTEK CORP	6	6	2.13	-1.50	-1.5
N	RECOGNITION EQUIP INC	27	7	6.75	-1.88	-1.875
Q	REXON INC	14	6	5.38	-0.38	-0.375
Q	SCAN TRON CORP	17	7	9.25	-0.75	-0.75
Q	SEAGATE TECHNOLOGY	46	10	10.16	-3.38	-3.375
N	STORAGE TECH CORP	6	1	1.25	-0.50	-0.5
Q	TANDON CORP	7	3	1.81	-0.28	-0.282
A	TEC INC	7	3	2.63	-0.25	-0.25
N	TEKTRONIX INC	43	30	28.63	-4.00	-4
Q	TELEVIDEO SYS INC	6	1	1.38	-0.88	-0.875
N	TELEX CORP	102	30	43.25	-3.88	-3.875
Q	WYSE TECH	45	11	19.88	-4.75	-4.75
N	XEROX CORP	88	50	50.16	-6.50	-6.5
Q	XIDEX CORP	18	6	9.88	-2.13	-2.125
	Leasing Companies					
Q	CAPITAL ASSOCIATES INTERNATIONAL INC.	37	10	13.63	-3.38	-3
N	COMDISCO INC	14	6	6.38	-1.00	-1
N	CONTINENTAL INFO SYS	8	3	2.75	-0.25	-0.25
Q	PHOENIX AMERN INC	7	3	8.75	-0.50	-0.5
Q	SELECTERM INC	67	42	65.50	-1.00	-1
N	U S LEASING INTL	308	216	239.38	-0.88	-0.88

EXCH: N—NEW YORK; A—AMERICAN; Q—NATIONAL; O—OVER-THE-COUNTER; S—SPLIT

O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

Thrill a minute

Stocks suffer chills, spills — but most rebound by week's end

Most computer stocks closed Thursday at about the same or a slightly higher price than they began the week with — but what a ride it was to get there.

High-tech stocks endured another apocalyptic session last Monday, but most major issues rode Thursday's market rally nicely

Notable examples, showing Thursday's gain and closing price in addition to the four-day change, were the following: Apple Computer, Inc., up 6 points to 39½, ending the four-day period up 4; Sun Microsystems, Inc., up 6½ points to 3¾, up a total of 2½ points; Ashton-Tate Corp., up 3¼ points to 18¾, up a total of 1 point; Lotus Development Corp., up 4½ points to 25¼, up one-quarter of a point; and Microsoft Corp., up 6½ points to 47¾, down one-half a point.

In the blue chips, IBM had a net loss of one-half a point in four days to 120¼, while Digital Equipment Corp. rose 7¾ to 134¾.

CLINTON WILDER

CORRECTION

The Oct. 21 figure and chart line for the CW Composite Index [CW, Oct. 26] should have been 81.2.

Bringing a tempest to a teapot

Dozens of microcomputer-related intros compete for buyers' minds, dollars

LAS VEGAS — Hundreds of vendors will compete for the spotlight today when Comdex/Fall '87 throws open its doors here. The products to be introduced at the show cover the microcomputer spectrum, from operating systems and applications software to monitors, boards, systems and peripherals designed for both the "PC classics" and the next generation of personal computing.

Quantum Software Systems, Ltd. will release its QNX Operating System for the IBM Personal System/2 family. The Kanata, Ont.-based company claimed its operating system is the first to offer multiuser, multitasking and integrated networking capabilities for the PS/2. The operating system is also completely downward-compatible with IBM's Personal Computers, PC ATs and compatibles, according to a Quantum spokeswoman.

Quantum, which has a joint marketing agreement with Hewlett-Packard Co. for the operating system, claimed that on the PS/2, the operating system provides 150 concurrent tasks in protected mode and 64 concurrent tasks in real-time mode. The entire program is 140K bytes.

The Quantum spokeswoman added that there are more than 200 third-party applications written for the operating system that run without any changes on the PS/2. Price is $450; for network purchases of 24 nodes or more, price is $113 each.

Amstrad, Inc. will announce the 11¾-lb PPC 640 portable computer. The unit includes an Intel Corp. 8086 8-MHz, 16-bit processor, a supertwist LCD, single or dual 3½-in. disk drives, 640K bytes of random-access memory (RAM), Microsoft Corp. MS-DOS 3.3 and a 300/1,200/2,400 bit/sec. Hayes Microcomputer Products, Inc.-compatible modem. The single-drive unit is expected to sell for $999, while the dual-drive model will cost $1,099. Both feature a full-size AT-style keyboard.

Amstrad is also announcing the PPC 512 portable, which has 512K bytes of RAM and no modem. The single-drive unit will sell for $799, while the dual-drive model will reportedly cost $899. Both the PPC 640 and the PPC 512 will run on AC, a car's cigarette lighter, an Amstrad PC 1640's power supply or C-size batteries, the company said. The portables are due in January.

Toshiba America, Inc.'s Information Systems Division in Irvine, Calif., is displaying its T3200, a $5,499 portable personal computer that is expected to be available for shipment in early 1988.

Amstrad's *PPC 640*

Emerald Systems Corp. is taking the wraps off its line of tape backup subsystems, which range in capacity from 60M to 300M bytes for the PS/2 Models 50, 60 and 80. The subsystems feature an Emerald proprietary tape adapter board that reportedly increases the performance of the PS/2s over subsystems using the diskette interface.

Wiseware, Inc. in Costa Mesa, Calif., is introducing a time-management package for use in personal computer-based local-area networks. Called Primetime Network, the software is said to allow managers and workers to track and manage group projects more easily and accurately by sharing their schedules, task lists, assignments, reminder notes and phone lists with each other. It will reportedly be available in the first quarter of 1988. Pricing has not been set yet, the firm said.

Symantec Corp. division Turner Hall Publishing in Cupertino, Calif., is set to introduce an enhanced version of its SQZ data-compression program for Lotus Development Corp.'s 1-2-3 and Symphony. SQZ Plus gives added protection to spreadsheets users while transparently compressing files by as much as 95%, the company said. New features include easy backup, recovery, a keystroke recorder and file history. It is priced at $99.95.

IGC in Santa Clara, Calif., said it plans to deliver its VM/386 multitasking program this month. VM/386, which is being announced here, was designed to deliver multitasking, virtual memory and a growth path to future hardware and software without forcing the user to buy new software or learn new interfaces, the company said. The program uses the virtual 8086 mode of the Intel 80386 microprocessor to create a series of guest virtual machines rather than virtual tasks.

As a result, the virtual machines run concurrently, and each thinks it has exclusive access to all the resources of the real computer, according to IGC. Multitasking is obtained by running a different application in each of the virtual machines, the company said. The introductory price per unit is $175; suggested price is $245. Shipments are set to begin Nov. 15.

Quadram is announcing its Quadmeg PS/Q, a memory expansion board for IBM's PS/2 Model 50 and 60. The product will reportedly be available with a driver for the Lotus/Intel/Microsoft Expanded Memory Specification Version 4.0 starting today. The software driver will be incorporated into the Quadmaster IV software supplied with the board. Prices are $545 for 512K-byte, $1,095 for 2M-byte and $1,995 for 4M-byte versions.

Gaggle of PS/2 links on display

LAS VEGAS — Users in search of communications links to IBM's Personal System/2 family have come to the right place. Comdex/Fall '87 promises to showcase a bevy of network and micro-to-mainframe link products, many supporting IBM's Micro Channel architecture.

Ideassociates, Inc. in Billerica, Mass., will introduce two micro-to-mainframe communications products said to offer multiple host sessions and enhanced file transfer capability for both the IBM Personal Computer and PS/2 workstations.

Both products allow users to work on several mainframe applications concurrently, a spokeswoman claimed. Features include a hot key, record and playback capabilities and IBM 3278 printer emulation for serial and parallel PC printers.

The Ideacomm 3278/DFT is a local coaxial PC-to-mainframe link that offers up to five host sessions, two of which can be used for printer emulation, the vendor said.

The Ideacomm 3270/SNA package is said to provide remote communications via a synchronous modem with support for up to eight host sessions.

A new file transfer program, IdeaFT, reportedly allows users of both products to download and upload files from the PC to the mainframe under IBM's Time Sharing Option, VM/CMS and CICS host environments. Pricing will be announced later.

Proteon, Inc. in Westboro, Mass., plans to feature the first demonstration of its Micro Channel interface for PS/2s on the firm's Pronet-10 10M bit/sec. token-ring networks and to unveil Pronet-10 Repeater Wire Centers (RWC).

The P2440 Series RWC extends network distances and features bidirectional, integrated reclocking repeaters. It can physically link four, eight or 12 nodes to Pronet-10 networks.

Prices for the RWC range from $685 to $1,275. Rackmount versions cost $835 without expansion ports or $890 with expansion ports.

Also scheduled to demonstrate Micro Channel-compatible adapters at Comdex are **Alloy Computer Products, Inc.** in Framingham, Mass., and **10Net Communications** (formerly Fox Research, Inc.) in Dayton, Ohio.

Alloy announced that its Host Interface/2 (HI/2) adapter, which allows IBM PC XT-style boards to interface to the Micro Channel bus, is now shipping. It costs $395.

At a press conference Wednesday, Alloy plans to detail an OEM agreement with Information Technologies, Inc., which reportedly will use the HI/2 along with an Alloy expansion chassis to provide an IBM 3270 gateway product on the Micro Channel bus.

10Net Communications will introduce a Micro Channel-compatible version of its 10-Net local-area network (LAN) adapter card. Slated for March delivery, the card will be bundled with 10-Net software at a cost of $695.

Server runs under OSI

BY PATRICIA KEEFE
CW STAFF

MOUNTAIN VIEW, Calif. — Bridge Communications, Inc., a subsidiary of 3Com Corp., will unveil at Comdex/Fall '87 what it claims is the first network server to implement the ISO's Open Systems Interconnect (OSI) protocol standard.

The Communications Server/1-OSI (CS/1-OSI) is said to be a modular communications processor that runs Bridge's internally developed implementation of the full seven-layer OSI protocol specification. It connects up to 64 terminals, personal computers, printers, host ports and modems to a local-area network, reportedly networking any combination of asynchronous, bit- or character-synchronous and IBM 32709 Category A or compatible devices.

Connection to terminals and other devices on the network is provided by the OSI Virtual Terminal Protocol, featuring the Telnet profile, which permits distributed access to any compatible networked host computers, Bridge said. Users attached to CS/1-OSI units can switch back and forth between OSI VTP-based hosts using simple commands.

The CS/1-OSI is also compatible with Technical and Office Protocol Version 3.0, a specification of the OSI protocols layered over Ethernet (IEEE 802.3). It uses the same multiple-processor hardware architecture as the Bridge Transmission Control Protocol/Internet Protocol (TCP/IP)- and Xerox Network Systems (XNS)-based servers, assuring users a migration path from TCP/IP or XNS to OSI by exchanging the unit's internal floppy disk.

The CS/1-OSI is priced from $9,900 (eight ports) to $16,000 (64 ports), plus a $250 OSI software fee. Existing users of Bridge CS/1 units based on TCP/IP or XNS can upgrade to OSI for $250.

Atari adds multitasking to ST, Mega PCs

LAS VEGAS — Atari Corp. is expected today to announce the availability of a real-time, multiuser, multitasking operating system for its ST and Mega personal computer lines.

The Idris operating system Version 3.0 from Whitesmiths Ltd. in Concord, Mass., was ported to the ST and Mega lines by Computer Tools International, Inc. in Federal Way, Wash.

Idris was chosen for the port because, unlike Unix, it does not require the computer to have a hardware memory management unit, which the Atari ST and Mega lines lack, according to Pat Nesland, president of Computer Tools International.

Nesland said her company, which is an Atari OEM, made the port for itself but that Atari has opted to distribute the product.

"Because there is some market for programs running under Idris, these programs can be ported and will be available to our customer base," said Leonard Tramiel, vice-president of software development at Atari.

Idris, written by Whitesmiths President P. J. Plauger in 1979 as a Unix Version 6-compatible development system for the Digital Equipment Corp. PDP-11, involves no code license from AT&T, a company spokeswoman said.

Microsoft pads Word with document option

BY STEPHEN JONES
CW STAFF

REDMOND, Wash. — Microsoft Corp. is expected this week to announce Pageview, a $49.95 add-in for MS-DOS versions of its word processing package that allows users to preview documents on-screen and integrate graphics from outside programs.

Pageview, which will be unveiled at Comdex/Fall '87, runs with Microsoft Word under Windows 2.0 or Windows 386 and is scheduled to ship in early December, said Charles Stevens, Microsoft group product manager.

The package was designed to position Microsoft Word as the word processor of choice for the Windows environment, Stevens said. The Apple Computer, Inc. Macintosh version of Word has featured similar page-preview capabilities as part of the basic program since it was upgraded in February.

Pageview requires a minimum of 512K bytes of random-access memory, but 640K bytes is recommended. The program uses MS-DOS 3.0 or higher, an IBM Enhanced Graphics Adpater (EGA) and either two floppy disk drives or one floppy and one hard disk drive. Users who are only interested in getting the "what-you-see-is-what-you-get" capabilities of Pageview do not have to purchase the graphics-related products.

Pageview enables the user to see exactly what a single page or two-page document will look like before making a printout.

In addition, graphics from programs such as Microsoft Excel and Lotus Development Corp.'s 1-2-3 can be inserted into Word when running under Windows and then be adjusted with Pageview, Stevens said.

Kathy Lane, an analyst with Dataquest, Inc. in San Jose, Calif., said the Pageview announcement is another indication that the IBM Personal Computer world is increasingly trying to emulate features available on the Macintosh. "The world wants Macintosh-like software on the PC," she said.

Questions strategy

While Lane said she believed Pageview should help Microsoft gain market share in the word processing market, she questioned the firm's sales strategy.

"It should be offered as part of the core product, like it is on the Mac [version]," Lane said. "Another limitation is that it requires such a sophisticated piece of hardware like the EGA."

Stevens, however, said the graphics card will help Pageview offer the most complete editing and page preview capabilities on a word processor. That could change, however, when Wordperfect Corp. releases a program early next year that it claimed will offer similar capabilities.

DPS 6 successors readied

Honeywell minis get next round of replacements

MINNEAPOLIS — Honeywell Bull, Inc. is scheduled this week to take the second major step in the replacement of its DPS 6 line of minicomputers with the introduction of the DPS 6 Plus 210 and 220 series.

Designed to support 10 to 20 users in a typical small office environment, the DPS 6 Plus 210 and 220 have been part of the vendor's plans since June 1986, when what was then known as Honeywell, Inc.'s Information Systems introduced the higher performance DPS 6 Plus 400, 410 and 420 series.

The announcement, scheduled for Wednesday, is timed to coincide with Comdex/Fall '87 in Las Vegas, where the DPS 6 Plus 210 and 220 are scheduled to be on display.

Replacing older line

The new models compare with the existing DPS 6/22, 6/40 and the low end of the 6/70 product lines. The latter systems remain available, but Honeywell Bull officials said all older DPS 6 systems will eventually be replaced by a full line of DPS 6 Plus models.

The 32-bit DPS 6 Plus 210 and 220 series systems are offered only in uniprocessor versions, compared with one- to four-CPU configurations of the DPS 6 Plus 400 series.

Honeywell Bull rated the DPS 6 Plus Model 211 at 0.7 million instructions per second (MIPS). That performance can be increased to 1 MIPS with an upgrade to a Model 221 with an optional Performance Booster Pac, which includes 8K bytes of cache memory.

The availability of the booster pack, a second cabinet, two additional disk drives and support for 24 rather than 12 communications lines are the key differences between the Model 211 and 220 series Model 221.

Honeywell Bull officials said they are seriously considering multiple-CPU versions of the 200 series systems.

The 220 and 221 series systems run Release 2.1 of Honeywell Bull's HVS 6 Plus operating system.

The new release also is being made available on the 400 series systems.

As with the earlier DPS 6 Plus systems, Honeywell Bull is positioning the new systems as a platform for the company's Office Network Exchange Plus, a modular, integrated departmental software system.

The base price for a Model 211 with 2M bytes of memory, six asynchronous ports, a peripheral controller, a 37M-byte disk drive, a streaming tape drive and HVS 6 Plus is $17,130.

The base price of a Model 221 is $27,130. The price to upgrade a minimum Model 211 to a minimum Model 221 is $13,960. The vendor said a typical 200 series system would range in price from $25,000 to $50,000.

The new models are now available in limited quantities and will be available in volume in the first quarter of 1988, according to Honeywell Bull.

VGA wave hits hard at Comdex

BY JAMES A. MARTIN
CW STAFF

LAS VEGAS — The IBM Video Graphics Array (VGA) aftermarket is expected to heat up at Comdex/Fall '87 with between 10 and 20 product introductions expected.

"Announcing a VGA product is becoming similar to announcing a disk drive. Everybody is going to have one," said Sohail Malik, a microcomputer graphics analyst at Dataquest, Inc. in San Jose, Calif. "It's not an option anymore if you're in the business of peripherals and offering add-in boards to the PC."

Expected to announce VGA products this week are, among others, Tecmar, Inc. and Orchid Technology, Inc., following on the heels of earlier announcements from AST Research, Inc., Quadram Corp., Paradige Systems, Inc. and Video Seven, Inc.

Both Tecmar and Orchid are set to introduce display adapter cards that reportedly offer BIOS and register-level compatibility with VGA and IBM's Enhanced Graphics Adapter graphics as well as support for IBM's 8514 display mode.

Higher resolution

The 8514 mode support is said to offer greater resolution of 1,024 by 768 pixels in 16 colors, compared with the VGA graphics standard of 640 by 480 pixels. Although Tecmar will demonstrate its VGA card at Comdex, the Cleveland-based company is initially making the board available only to two IBM Personal Computer-compatible OEM vendors for inclusion in their yet-to-be-announced systems, according to Dan Lucarini, Tecmar spokesman. He would not identify the vendors but said the micros should surface around the first quarter of 1988.

Lucarini said Tecmar will also release the VGA adapter as a retail market add-in card following the microcomputer introductions for under $500.

Separately, Orchid will demonstrate its first VGA efforts for the IBM PC XT and AT as well as IBM's Micro Channel architecture Personal System/2 models. The Designer VGA and VGA-2 boards reportedly support additional resolutions beyond standard VGA, including 640 by 480 pixels in 256 colors. The Designer VGA is a half-slot card for the PC XT and AT and is priced at $499. The Designer VGA-2 is priced at $699. Shipments are scheduled for December.

IBM

CONTINUED FROM PAGE 1

including Oracle Corp. and Borland International, have promised to release OS/2 applications as soon as the operating system becomes available.

These products, which are said to be simple ports of existing applications, will take advantage of some of OS/2's capabilities, such as the ability to directly address up to 16M bytes of memory.

IBM's Lowe recently claimed the firm has shipped one million PS/2s. However, IBM's definition of shipping refers to the number of machines manufactured and shipped to IBM warehouses, not actual shipments to customers. Lowe's remarks may be backed up by the shortage of PS/2 Model 30s and 50s recently reported by dealers. Despite the PS/2 sales, IBM competitors have prospered, with some reporting sales that have far outpaced those of IBM.

IBM's more aggressive delivery schedule is partly a reaction to the continuing success of clone makers and the building pressure from Apple Computer, Inc.'s success in corporate America. Apple has already delivered the sort of graphical user interface that IBM is moving toward, and it beat IBM to the punch with Multifinder, one form of a multitasking solution. Topview was IBM's ill-fated attempt to bring early multitasking to its systems.

IBM'S MORE aggressive delivery schedule is partly a reaction to the continuing success of clone makers and the building pressure from Apple's success in corporate America.

Anxious, but cautious

Users said they are anxious to get started with OS/2, but they remain cautious. "We will probably purchase OS/2 next spring — as soon as it comes out and is workable. Right now, I'm not sure that when their product first comes out it will have everything bug-free," said the MIS director of a West Coast Fortune 500 company.

The MIS director said he is also interested in OS/2 Extended Edition, arguably the most important piece of IBM Personal Computer software for MIS. "We are looking at it from its connectivity potential with the 3090," he said.

In addition to a variety of communications capabilities, OS/2 Extended Edition offers IBM DB2-compatible SQL engines, data base tools and advanced communications facilities. While it is still unknown whether OS/2 Extended Edition will run on IBM compatibles, it is clearly aimed at improving the connectivity between PC and mainframe environments, in particular PC integration with DB2.

While the Database Manager component of OS/2 Extended Edition, which costs $795, is more robust than many competitors would like, it is expected to lack some key features, particularly in the areas of report writing and applications generation, according to sources familiar with the product.

The limitations may provide fertile ground for existing relational data base management system vendors to offer tools, such as fourth-generation languages, for data access and application development.

Because the product requires 3M bytes of random-access memory, it will be positioned largely to run on servers rather than individual workstations, sources familiar with the product said. Parts of OS/2 Extended Edition can be installed separately, allowing departments to install only the components they require, according to IBM.

Despite some limitations, the product is built on a solid architecture and, to a great degree, resembles DB2.

Apollo station tied to SNA wagon

Domain/LU6.2 tool offers data exchange on IBM's peer-to-peer network

BY ELISABETH HORWITT
and PATRICIA KEEFE
CW STAFF

Apollo Computer, Inc. last week became the latest vendor to hitch its workstations to IBM's peer-to-peer Systems Network Architecture (SNA) network, announcing the Domain/LU6.2 software package.

In a separate announcement, Spectrum Concepts, Inc. of New York last week introduced a version of Xcom 6.2, file-transfer software for Apollo systems that takes advantage of Domain/LU6.2. Spectrum was a beta-test site for the new Apollo software.

Based on software from Orion Network Systems, Inc. in Berkeley, Calif., Apollo's Domain/LU6.2 allows Domain workstations to exchange messages and files with one another and with IBM systems over an SNA peer-to-peer network, Apollo said.

IBM's no host

Domain/LU6.2 incorporates IBM's PU2.1 protocol, which allows Apollo workstations to communicate with one another on a Domain network without having to go through an IBM host, said Sam Alunni, senior product manager for IBM interconnect products at Apollo.

Domain/LU6.2 runs with Apollo's Aegis operating system, AT&T's Unix System V and the University of California at Berkeley's Unix 4.2, the vendor said. The software includes a multidrop networking function, said to link multiple Domain workstations. Also provided is a mouse-driven graphics interface that can reportedly be used to call up network management services under LU6.2.

Priced at $6,000, Domain/LU6.2 is scheduled to ship in December.

Spectrum's Xcom 6.2 file-transfer software further expands the horizons of Apollo network users by reportedly enabling the exchange of information among Apollo workstations, IBM mainframes and System/38 machines, Digital Equipment Corp. VAXs and various personal computers attached to a wide variety of media and local-area networks.

Xcom 6.2 is said to integrate Apollo's security manager with widely implemented security systems such as Computer Associates International, Inc.'s ACF2 and Top Secret and IBM's Resource Access and Control Facility.

Spectrum Concepts is positioning Xcom 6.2 as a replacement for data exchange methods, such as IBM's NJE and RJE, that require printer and card-reader (dumb-node) emulation.

Acting intelligent

Under Xcom 6.2, Apollo workstations appear as intelligent nodes to remote SNA systems, Spectrum Concepts said. Apollo workstations can reportedly use Xcom 6.2 to send files directly to IBM host VSAM files and to other standard file types. Also supported is IBM's JES, with a facility to extract spool files directly.

To run on an Apollo system, Xcom 6.2 requires Domain/LU6.2, which requires a gateway node, either Apollo's DSP90 server or its DN 580 Turbo or DN 590 Turbo workstation equipped with a Domain/Comcontroller. Xcom 6.2 must be installed on the remote system with which files will be transferred.

The Apollo version of Xcom 6.2 costs $3,500 per computer and will reportedly be available in February from Spectrum.

MCI's pricing of its T1 plan takes aim at rival AT&T

BY ELISABETH HORWITT
CW STAFF

WASHINGTON D.C. — Continuing its efforts to undercut AT&T's rate structure whenever feasible, MCI Communications Corp. announced last week a T1 services volume pricing plan said to offer savings of up to 35% more than a comparable AT&T offering that went into effect late last month.

Scheduled to take effect Nov. 16, MCI's Network Pricing Plan offers significant rate cuts to customers who commit to a minimum monthly amount of interoffice channel charges on the carrier's TDS 1.5 networking service, the vendor said.

Unlike previous MCI volume discount offerings, the plan does not require that the minimal charges be generated by specific customer circuits over a fixed term. Customers can add or subtract channels on 90 days notice as long as the total monthly charge meets the minimum guarantee, MCI said. The plan is available for channel revenue commitments ranging from $25,000 to $750,000 over a one-, two- or four-year period.

AT&T's volume pricing plan also provides volume discounts to customers that can guarantee a minimal amount of revenue during terms of one, three or five years, the carrier said. Like MCI, AT&T allows customers to "mix and match" the circuits, an AT&T spokeswoman said. AT&T's minimum charge for a one-year period is $50,000.

Favorable step

MCI's offerings "are a step in the right direction," said Lap Lee, a telecom analyst at Salomon Brothers, Inc.

"We should see MCI offering more along those lines in terms of increased flexibility for customers," he said.

Customers can also order TDS 1.5 circuits on a monthly basis or on a fixed term of either one, two or four years, MCI said.

Second-class postage paid at Framingham, Mass., and additional mailing offices.
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INSIDE LINES

Bermuda triangle. IBM executive Ambrose Carr told independent leasing executives the company will extend 24-hour, seven-day-a-week service to all customers signed up for the IBM Maintenance Agreement. In a closed-door meeting at the Computer Dealers and Lessors Association (CDLA) in Bermuda last week, Carr said the announcement will be made this week, according to attendees. Previously, unless they had signed up for the Corporate Service Amendment or the newer mid-range amendment to the basic maintenance plan, users had to pay extra for blanket service coverage. Carr declined to respond to *Computerworld* about assertions made by CDLA members that IBM has been offering 3090 Models 400E and 600E to customers with a provision for no payments until six months after installation, a provision previously offered to customers buying smaller 3090s. CDLA members also said IBM is preparing to make it easier for users to move equipment being resold to others.

First in line. Independent maintenance leader Sorbus will offer the first third-party maintenance for the IBM 3090 line in early 1988, a Sorbus sales director told customers last week. Sorbus will also launch aggressive service programs for DEC and Amdahl equipment next year, said Jack Betts, a longtime IBM executive who took early retirement and is now Sorbus's director of AT&T system sales.

More grist for IBM's mill. The next converts to IBM's peer-to-peer Systems Network Architecture will be AT&T and Apple, according to Orion Network Systems, which supplied the software. AT&T's Intel 80386-based server and Apple's Macintosh will begin supporting IBM's LU6.2 and PU2.1 protocols sometime in the first quarter.

Direct link to the oracle. Novell will unveil two strategic alliances this week, enabling users of its Netware operating system to take full advantage of relational data base functionality and the power of a 386-based operating environment. At Comdex/Fall '87, Novell will announce comarketing agreements with Oracle, publisher of a namesake relational data base package, and The Software Link, which markets PC-MOS, a multiuser, multitasking operating system for 386-based computers.

Close the books, please! Ending a fiscal year it would like to forget, DG last week reported a $127.1 million, $4.71 per-share loss for the year ended Sept. 26. Although the figure included one-time losses of $44.2 million, the operating loss of $83 million was, nonetheless, a brutal one. Revenue was up a tiny $6.3 million, or less than 1%, to $1.27 billion. DG did report a fourth-quarter operating profit of $3.4 million but took a $26 million charge for its settlement with Digidyne.

For whom Bell tolls. DEC minicomputer pioneer Gordon Bell will take a more active role in the "personal supercomputer" being designed by start-up Dana Computer in Sunnyvale, Calif. Bell, a member of Dana's founding management team, was named vice-president of engineering and research and development, reporting to Dana President — and Convergent Technologies founder — Allen Michels.

FTS 2000 network does a split. Caving in to the demands of cigar-chomping Rep. Jack Brooks, the General Services Administration has ditched its plan for a winner-take-all procurement of the Federal Telecommunications System (FTS) 2000 long-haul voice and data network. The GSA said FTS 2000 will be split so that 60% of the business will go to the winner and 40% to the runner-up.

All in the family. Computer Associates has broken out a separate division for its relational data base management system, CA-Universe. The new Data Base Division, which had been a business unit within the Systems Product Division, will be headed by Michael Fisher. In a separate move, Michael Guido, president of the Systems Product Division, has moved from Computer Associates' Garden City, N.Y., headquarters to the McLean, Va., sales, marketing and development facility. Guido, who will function as vice-president of sales, was replaced by Bryan Shepherd, senior vice-president of the International Products Division.

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